Veterinary Medicine

Registered in U. S. Patent Office

VOL. XXIX JULY, 1934 No. 7

Published Monthly by the Veterinary Magazine Corporation
75 East Wacker Drive, Chicago, Ill., U. S. A.
$4.00 a Year

Entered as second-class matter Nov. 8, 1920, at the post office at Chicago, Ill., under the Act of Mar. 3, 1879.
Entered as second-class matter under the title of American Journal of Veterinary Medicine, July 19, 1910 at Chicago, Illinois, under Act of March 3, 1879.
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All veterinary colleges in the British Isles, except the Royal (Dick) Veterinary College, Edinburgh, admit women for training. There are 31 women on the 1934 R.C.V.S. Register. At a recent meeting of the Central Veterinary Society in London three of the papers on the program were presented by women.

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Of recent years the "doping" of race horses has increased to a point that Joseph E. Widener, noted international turfman and head of Hialeah and Belmont Parks, described racing as "not a competition between horses, but between prescriptions." At the beginning of the 1934 winter racing season, the Florida state racing commission took vigorous steps to curb the practice. The work at the Miami tracks was delegated to Chas. E. Morgan, a chemist, and J. G. Catlett, veterinarian. They were highly pleased with the results attained with the French or saliva test for the detection of doping. Immediately following the close of the season at Miami, Morgan and Catlett went to France where they will study French methods of controlling the "doping" evil at French racing meets, throughout the summer in an effort to improve their technique for next winter's season at Miami.

Veterinarians are needed to serve on tuberculosis and other commissions in order that the work in this field may be conducted intelligently and successfully along scientific lines.—Ann., Rept. N. Y. State Vet. Col.

* * * *

An Associated Press item states that last year 12 women veterinarians were graduated in Great Britain, and that during the same period, there were 6,000 veterinary college students in Russia, 2400 of whom were women. From still another source comes the information that Russia instituted a survey of all horses adaptable for military service and found 27 million eligible for and duly registered for military purposes.

* * * *

There were 76 cases of psittacosis in this country in 1932, seven of them ending fatally; 15 cases with four deaths in 1933, and 37 cases and 13 deaths to March 15, 1934. Of the 76 cases in 1932, 41 occurred in California; of the 15 cases in 1933, 10 occurred in California and the remaining five were contracted from parakeets shipped out of California in violation of the regulations of the State Department of Public Health. All psittacine birds are susceptible to the disease and when infected, capable of transmitting it to man.

Loss of Veterinarians' Portraits

The fire starting in the Union Stock Yards, Chicago, May 19, which burned over about 40 acres of the "yards" and an area half as great immediately east of the northeast section of the yards destroyed completely the quarters of the Saddle and Sirloin Club, including its famous gallery of paintings of leaders in agriculture. This gallery contained portraits of more than a hundred men who have rendered conspicuous service to agriculture in any of its branches from the time of Robert Bakewell to the present, and included among those so signally honored, eight veterinarians; Leonard Pearson, John Gunion Rutherford, G. Howard Davison, Daniel Elmer Salmon, Alonzo D. Melvin, John Robbins Mohler, H. J. Detmers and James Law. A portrait of Marion Dorset, M.D., whose work has been chiefly veterinary also hung in the gallery.

Noted buildings other than that of the Saddle and Sirloin Club, the interiors of which were burned out, include the fine new Live Stock Exchange, Stock Yards Inn, Drovers National Bank, Stock Yards National Bank and Dexter Pavilion where the International Live Stock Exposition has been held. Repair of all of these buildings is already under way.

The building containing the offices of Wayne Dinsmore, secretary of the Horse and Mule Association of America, was burned and all the records of the Association lost. Mr. Dinsmore has established temporary offices at 407 South Dearborn St., Chicago, and requests all members of the Association to send him, immediately their recepts for the payment of dues that an official membership list may be reconstructed.

None of the packing houses was in the pathway of the fire, nor was the market interfered with, nor any of the activities of the yards suspended because of it. The fire occurred when the yards are practically empty; only about 1200 animals were burned.

Promoting and Discouraging Veterinary Service

The attitude of the Associated Serum Producers, Inc., and of the remainder of the anti-hog cholera serum producers toward the veterinary practitioner is well known but will bear repeating. The former have again, as for the past several years, launched a farm paper and radio advertising campaign urging upon swine raisers the advisability of having their hogs vaccinated and the advantages of having the work done by qualified veterinarians.

The list of farm and live stock publications in which this advertising will appear has been extended and this season includes: Successful Farming; Farmer, Farm, Stock & Home; Dakota Farmer; Wallaces' Farmer; Nebraska Farmer; Kansas Farmer; Missouri Ruralist; Prairie Farmer; Indiana Farmers Guide; Ohio Farmer.

These publications have an aggregate of more than 2,500,000 farm subscribers.

In addition to this, the following radio stations are to be used daily except Sundays: WLS, Chicago—104 broadcasts; WNAX, Yankton, S.D.—109 broadcasts; KFAB, Omaha-Lincoln—100 broadcasts; WHB, Kansas City—100 broadcasts.

A new feature of the radio announcements will be information concerning outbreaks of cholera in various communities. Veterinarians are solicited to supply this information by wire, collect, to the advertising representatives of the Associated Serum Producers, Inc., R. J. Potts and Company, 101 West 11th Street, Kansas City, Mo. Experience has shown that this is a very effective way of increasing hog vaccination not only in the communities concerned but throughout the swine belt. No veterinarian who is awake to his opportunities will neglect this means of increasing his own work and of serving the entire swine industry.

Perhaps no statement can more forcibly illustrate the different attitude of the companies comprising the Associated

Serum Producers, Inc. and the producers selling direct to the farmers, toward the veterinary practitioner than one of the farm paper advertisements of the former reproduced herewith and a letter by one of the farmer-selling companies sent to county agents in Missouri beside it.

Apparently the graduate veterinarians and chemists to which Doctor Lopp refers, are himself and his associates, Dr. Ray Johnson and Mr. Jake Weiner. Drs. Lopp and Johnson are members of the A. V. M. A., and Mr. Weiner in the past has appeared on the programs of veterinary associations in the middle west.

The producers comprising the Associated Serum Producers Inc, are: Allied Laboratories, Inc., Blue Cross Norden Serum Co., Corn Belt Serum Co., Fort Dodge Laboratories, Inc., Grain Belt Supply Co., Jensen-Salsbery Laboratories, Inc., Liberty Laboratories, Missouri Valley Serum Co., Patterson-Harwood Laboratories, Inc., Pitman-Moore Co., Platte Valley Serum Co., Sioux City Serum Co., Sioux Falls Serum Co., The Corn States Serum Co., The Gregory Laboratory, The Johnson Serum Co., The Royal Serum Co., The Simonson Serum Farm, The Southwestern Serum Co., The United Serum Co., the Columbus Serum Co., The National Laboratories and The Norden Laboratories. They merit the serum business of all veterinarians. An order placed with any of them purchases support as well as serum; their object being "to protect the serum industry and safeguard hog raising by the proper administration of serum and virus." An order placed with the farmer-selling companies is in a very real sense giving aid and comfort to the enemy.

A Study in Contrasts

Let's Look Hog Reduction square in the face

Last year, 60 pigs farrowed — this year only 45. Problem: How many of them will die?

Are you one of those farmer patriots who have agreed to cut your hog production 25 per cent under your average for 1932 and 1933? If so, you will remember that your pledge is based on the pigs *farrowed*—not the hogs marketed. Will you risk having the number of pigs you are to fatten this fall further reduced by cholera?

You Must Answer

The question is squarely up to you. You can take the risky short cut of home diagnosis and amateur vaccination—or you can profit by the experience of the most successful farmers and swine owners who have found qualified veterinary service indispensable.

One Sure Precaution—

As manufacturers of serum and virus, we of course urge you to have your hogs vaccinated. But we are also anxious to have you use serum and virus to your benefit and profit. That's why we urge you to engage the services of your veterinarian. He knows from his years of training when it is safe to vaccinate, and when certain complications like flu, enteritis and other low-grade infections make it necessary to wait until those conditions are corrected.

Be safe—call your veterinarian.

ASSOCIATED SERUM PRODUCERS, Inc., is an organization of 18 leading producers whose object is to protect the serum industry and safeguard hog raising through the proper administration of serum and virus. (6)

ASSOCIATED SERUM PRODUCERS, Inc., Live Stock Exchange Bldg., So. Omaha, Nebr.

CONSULT YOUR LOCAL VETERINARIAN

PEERLESS SERUM COMPANY
Kansas City, Kansas
Oct. 26, 1933

Dear Sir:

Today farmers universally vaccinate and treat their livestock themselves. This eliminates the cost of veterinary service.

County extension agents are our dealers. We allow you a 10% discount on hog cholera virus and a 20% discount on Anti-Hog cholera serum and other products.

We are enclosing one of our folders in which we are featuring on the front page, with the first order, 1250cc of clear concentrated Anti-Hog cholera serum and 75cc of hog cholera virus together with two syringes and two needles for $10.00. This is enough serum and virus to treat 50 pigs using 25cc of serum and 1½cc of virus for each pig. These two syringes are of the highest quality made. The barrells are of pyrex glass and double strength. We are making this special offer for the reason that we want you to get acquainted with our products. We pay transportation charges on all size orders.

Our organization is composed of Graduate Veterinarians, Chemists, and Bacteriologists, all are specialists in their lines and are graduates of the highest standing colleges. Should you have any condition in your livestock which you do not understand, we invite you to write us, giving the symptoms and history and we will answer your questions in a personal letter.

Assuring you that it is our desire to cooperate with you, and if favored with your orders, they will be highly appreciated and receive our prompt attention, we are

Yours very truly,
PEERLESS SERUM COMPANY
By (Signed) Walter J. Lopp, President

Diphtheroid Angina of Cattle

By H. J. MAGENS,
Huron, South Dakota

DURING the past few years we have been consulted with alarming frequency concerning an infectious angina of cattle. Although the symptoms during the initial stages of the disease do not seem at all alarming, nevertheless many attacks prove fatal in the end. This observation and the ever increasing extent of this malady prompt us to go into the matter more fully.

The disease was first observed several years ago in one of the central Texas counties, Gillespie County. In a comparatively short time it occurred also in neighboring counties. Since then numerous sporadic as well as enzootic outbreaks have been reported, clearly indicating increasing prevalence of the disease, over wider areas.

Diphtheroid angina of cattle is a febrile, infectious disease, which beginning with a mild rhinitis often progresses to a bronchopneumonia, accompanied in most cases with a croupous inflammation of the bronchi, trachea, larynx, pharynx and sometimes also the mucous membranes of the oral cavity, and ends fatally. Edema and gelatinous infiltration of all tissues extending from the submaxillary to the prescapular and sternal regions are characteristic.

The distress caused by edema and injection of the cervical lymphglands and adjacent tissues, discharges of muco-purulent material from the nostrils and the mouth, dyspnea, and difficulties of deglutition and subsequent regurgitation of liquids are of sufficient importance to induce the owners to call a veterinarian. By that time general symptoms such as lack of appetite, fever, more or less tremor, a snoring noise, when breathing, together with a frightened anxious behaviour of the animals is evident.

In searching the available literature we find, that some Danish authors, especially Grunth, have described a condition closely resembling the one we were dealing with. He states, that the condition is mostly confined to cows soon after calving or during the lactation period. We also found the diphtheroid angina mostly affecting cows, although during sporadic outbreaks, we saw steers primarily, and here and there also a bull infected. Calves have not been observed suffering from the malady even though their dams were sick.

Grunth describes infected, croupous areas upon the various mucous membrances of the upper air passages and the oral cavity as symptomatic. He found with them a high intermittent fever, an accelerated pulse and respiratory rate, loss of appetite and absence of rumination. Serous nasal discharges soon become purulent, thick and of an offensive odor. He describes a bloody, profuse diarrhea, which we have not seen. He also states that many cases show an edema of the conjunctivae; later on a purulent lachrymal discharge, and a keratitis with severe hemorrhages. We have not observed these symptoms.

In most cases complications arise sooner or later. Grunth observed a broncho-pneumonia in about 40% of his cases. The bronchi, the larynx, the trachea show a progressive croupous inflammation. Large degenerated areas and infarcts are the rule. A metastatic diphtheritic metritis and vaginitis, which also affects the parametrium, the peritoneum and the urinary organs, was reported by this author. We saw these metastatic results in only a few rare instances. The duration of the disease from 9 to 30 days coincides with our observations.

Huynen and Longiudice are of the opinion, that the disease described by Grunth is identical with the "Malignant Catarrh" of Anker (1832), Bugnion (1877), Lucet (1892) and finally Leclainché (1898). Moussu however is of the same opinion as Grunth. In view of the closely resembling clinical findings, supported by frequent lab-

oratory reports, showing in every case a diphtheroid streptococcus and no colon bacilli, we hold that the disease we encountered is in many respects very similar to, if not identical with, the one described by Grunth.

The symptoms closely resembled those described by Grunth. The first to appear are generally sneezing and a serous nasal discharge. Palpation of the parotid and submaxillary regions is extremely painful. As the disease progresses the animal's general well being becomes very much impaired. The pulse becomes hard, fast and wiry. Together with the increasing edema of the pharyngeal and submaxillary regions, the breathing becomes more and more labored. The animal due to the fact, that regurgitation of liquids is now the rule, tries to drink frequently. The appetite is lost. Lactation and rumination have ceased. The animal exhibits a frightened, worried look, its coat becomes dull and staring. The head is extended to facilitate breathing, the forelegs are spread apart to relieve pressure upon the thoracic cavity. Later pulmonary symptoms dominate the clinical picture. Ausculation and palpation reveal at first large congested areas, râles, dullness, etc. are easily demonstrated. Later the picture of a broncho-pneumonia is complete. Valvular deficiencies and other complications of heart and pericardium may be heard. As the cases advances dropsy of the pleural cavity is evident. Metastatic complications related in the preceding paragraph were only rarely encountered, possibly because our cases were mostly rather virulent.

The only lesions observable antemortem are those found in the oral and nasal cavities—infected areas and infarcts on the various mucous membranes. The extensive edema extending from the submaxillary to the sternal regions can hardly be called a lesion.

The most effective treatment used at first consisted of intravenous administration of large amounts of anti-hemorrhagic septicemia serum, alternating with colloidal carbon injections and sodium cacodylate. Later on after the first post mortem examination had been made to this treatment was added the administration of the specific bacterin, containing the diphtheroid-streptococcic organism thought to be responsible for this malady. The results were gratifying, if treatment began during the initial stages, before pathological changes had appeared the repair of which became impossible. Prophylactic treatment proved successful, indicating the infectious nature of the disease.

Local treatment of pharynx or larynx is to be discouraged. It is essential to regulate the feed, we have used with great success oatmeal gruel, of a rather thin consistency. We had the drinking water heated enough to take the chill off and gave it by mouth speculum and tube if the animal could not swallow well. Later we recommended azamine instead of the colloidal carbon.

The course of the disease runs as stated from 9 to 30 days. Prognosis should be at all times guarded in view of the many sequelae encountered.

Postmortem examination of several cases revealed very similar findings. The gelatinous infiltration of the regions described was enormous. Heart and pericardium were completely enfolded in a heavy thick leather-like fibrinous coat of a tough consistency, yellowish in color. Pleura, pulmonary tissues, pericardium and heart had become one solid mass. The pleural cavity was filled with an amber colored fluid, measuring several gallons. Not only within the lungs, but also in the trachea, the bronchi and bronchioles large inflamed, walled off areas were seen. Big caverns and infarcts were found within the pulmonary connective tissues, containing broken down, liquified tissues and pus. Two or three animals exhibited similar conditions in the kidneys.

Laboratory specimens were taken from the various tissues. The diphtheroid-streptococcic organism was found responsible for the trouble. Major Randal, V. C. U. S. Army, deserves credit for these findings, which were similar to some trouble he had encountered in horses. We found only one instance where a horse suffered from a similar condition. The findings on specimens submitted to another laboratory were in complete accord with the findings of Major Randal.

Malignant Edema in Deer

By E. K. LE DUNE and FRITZ VOLKMAR,
Columbus, Ohio.

DURING the summer of 1933, sportsmen and tourists, visiting the Roosevelt Game Preserve, located in the hill country along the Ohio river, between Portsmouth, O., and Cincinnati, O., observed that deer in the park were dying in large numbers from some mysterious disease and brought this to the attention of the State Conservation Department.

The summer in question was rather dry. The creeks were chains of stagnant pools, covered with an algae-containing scum. Other water-holes, frequented by the deer, likewise had a low water level, and were supporting a luxuriant growth of plankton. No investigation was ordered at the beginning of the apparent deer-enzootic, because the Commissioner of Game seemed satisfied to accept as a plausible explanation of the losses the convenient opinions of the game wardens that the deer had died either from malicious poisoning by irate neighboring farmers, on whose cornfields some of the deer occasionally trespassed, or from accidental poisoning from corn mash, carelessly left about their premises by "moonshiners." Thus valuable time and autopsy material was lost which could have been used advantageously to check the hygienic conditions in the park, and which would have thrown additional light on the nature of the deaths. It is safe to assert that no single cause can be held responsible for all the losses during the season.

Finally, during the latter part of September, the Game Commissioner yielded to the repeated urgent requests of the sportsmen, and sent Doctor LeDune, then Parasitologist and Pathologist for the Ohio State Conservation Department, to the game refuge, to investigate the so-called deer disease. On two of the five trips made, the co-author was invited to join the investigation.

Inquiring into the history of the seemingly enzootic outbreak of the disease, we learned that 27 deer had been found dead near the ranch-house. The total deer population of the park is estimated to be one thousand. No information was available about death of deer in the less accessible mountain fastness of the refuge. The game wardens denied that any disease in deer had been observed in previous years. However, in consulting with Doctor Gill, practitioner at Portsmouth, O., we learned that he was called to the Roosevelt Game Preserve on several occasions during the past few years to examine deer which had died on the refuge. The recollection of his observations was to the effect that a septicemic condition was present in those deer. In the course of the investigation we had an opportunity to examine seven deer, which, likewise, were found dead in the vicinity of the ranch-house. It is not intended here to fatigue the reader with the minute details of our investigation and laboratory experiments which will be published later on. It is merely designed to present a brief summary of what the investigation has revealed.

The dead deer were, as a rule, found near water-holes or near creek-beds. In those cases where we had an opportunity to examine the deer on the spot where they had died, a careful search of the environment of the location was made. In no instance was anything found to indicate that the deer had been chased by dogs. A search for other dead animals, such as rodents or predatory animals, near the water-holes or in proximity to the dead deer, was likewise negative. None of the deer revealed any gunshot wounds. The ground where the deer were lying gave evidence of a rather brief death-agony. All of the deer showed bloody froth exuding from the natural body openings. None of the deer disclosed grass-bundles or foreign bodies between their jaws. Rigor mortis was still present in most of the animals; in some of them, algor mortis had not had time to develop. All of the deer examined had a few louse-flies (*Lipoptena* sp.)

between the hairs of the skin, usually in the region of the head.

Edema of the skin and subcutis was found present in all animals. In some of them, more or less gas formation was observed, especially in the subcutis and in the muscles of the extremities. The vessels of the skin were visibly injected. A well developed fat cushion was present in the subcutis of all the deer. On opening the abdominal and thoracic cavities, varying amounts of a clear, straw-colored fluid were obtained. The internal organs did not show any pronounced lesions, except for the finding of petechiae on the epicardium and in the serous surface of various other visceral organs quite constantly. The spleen was usually very mushy and of a blackish, tar-like color on cut surface. The livers appeared normal in size, dark in color, and firm in consistency. Heart and kidneys disclosed cloudy swelling. In one case, a hemorrhagic cystitis with rupture of the bladder was found. The stomach compartments contained ingesta consisting of plant-particles in various stages of digestion. The intestines exhibited catarrhal inflammation throughout. Internal parasites could not be demonstrated in any of the deer with the technic employed under field conditions. No lesions or parasites could be found in the upper digestive tract, or in the cavities of the skull. The lungs exhibited venous congestion.

The specimens of organ tissues collected were subjected to microscopical examination, upon which, uniformly, a spore-forming bacillus was found to be present in the tissues. Material for bacteriological examination was taken exclusively from the bone-marrow, because it is usually the last tissue to be invaded by cadaver bacilli, and, therefore, still free from contamination for several hours after death. Propagation of the organisms in culture media revealed that they belonged to the anerobic type of bacteria. Animal experimentation proved their pathogenicity especially for guinea pigs; rabbits were found to be refractory to the inoculation. Concerning the nature of this potential causative agent, the morphological, cultural, and biological studies indicated that we deal here with with a *Clostridium* species.

The fact that the deer were found without exception, either dead or in a dying condition, near the water-holes, does not in itself prove that the water was the cause of the deaths; it may indicate that the deer were suffering from a fever, and that death overtook them, while they were slaking their feverish thirst. However, the possible involvement of algae-poisoning, a reputed source of losses in domestic animals, had been present in the mind of the investigators from the beginning. Consequently, a composite sample of water from two of the water-holes near which dead deer had been found, was given to one guinea-pig which promptly died from the inoculation. Bacteria which corresponded in morphological and biological characteristics closely to the bacillus isolated from the bone-marrow of the deer, were isolated from this animal.

Additional water-samples from seven different pools, known to have been frequented by deer, were collected on a later trip. Small amounts of these samples were injected subcutaneously into rabbits, guinea-pigs, rats, and pigeons. With the exception of the rabbits, they all succumbed within from twelve to twenty-four hours later. According to the morphological observation, staining characteristics, and other biological behavior, the organisms recovered from them proved to be identical with those isolated previously from the deer.

Animal inoculation, while valuable as a means for demonstrating pathogenicity, is not always a reliable convenience for differentiating species or even types of bacteria. The fact that rabbits proved to be refractory, does not exclude the possibility that the bacillus involved was indeed *Vibrion septique*. Gilruth, 1911, has clearly shown that a strain of *Vibrion septique* exists which is non-virulent for rabbits. Due to the confusion still prevailing in the classification and nomenclature of the different varieties of the anerobic gas-bacilli, producing malignant edema, we will not attempt at present to settle the question as to the species of *Clostridium* involved.

With regard to the theory of poisoning,

nothing was found to substantiate this suspicion. Deer that die from strychnine poisoning are usually found to contain grass roots or hair bundles between their teeth. The macroscopical examination of the stomach content did not reveal any particles of known poisonous plants. The feeding of part of the stomach content and of various organ-tissues to laboratory animals, and the observation of these animals over a period of several weeks, proved likewise negative to the theory of poisoning. In addition, a chemical analysis of part of the stomch content and of organ-tissues was made by Dr. J. F. Lyman, professor of biochemistry at the Ohio State University. His report to the Game Commissioner disposed of the theory of malicious poisoning definitely as untenable with regard to the poisonous substances searched for.

Summarizing the findings from the postmortem examinations, we find that the death of the deer examined was evidently from asphyxiation. Nothing was found to indicate the presence of a competition of causes of death. The cause of this asphyxiation was undoubtedly an acute infectious disease. This assumption became more persuasive by the isolation from the bone-marrow of the deer, of a germ pathogenic for certain laboratory animals, and falling into the classification of *Clostridium* by its morphological characteristics.

Considering the ubiquitous nature of these germs, gas-bacillus infection in wild life is probably not a rare disease, although, it is seldom reported in literature. Malignant edema has been reported from deer in European countries. A similar disease, blackleg, is said to have been observed in deer in Missouri, according to a personal communication from Dr. C. P. Fitch, University Farm, Saint Paul, Minnesota.

The result of our investigation of the water-samples points strongly toward the water-holes as the source of the infection in deer, in other words, it seems to indicate that the disease was water-borne. The portal of entry may have been bleeding gums in the case of those deer which were shedding their teeth, or abrasions on the legs while browsing through underbrush, in others. When drinking from a scum-covered pool, deer will paw the scum aside; again, during the hot season, deer are fond of standing in the water. Thus, the association of the bacilli of malignant edema with other bacterial contamination in the wound, so necessary for the development of the former in the animal tissue, becomes practically assured under such conditions.

Although, algae-poisoning has to our knowledge never been reported from deer or other game animals, its consideration must certainly enter into the discussion of the differential diagnosis. Since an algae-scum was found in all the water-pools frequented by the deer, its possible connection with the deer-losses in the park should not be overlooked or underestimated. However, the postmortem examination and the bacteriological examination of the seven deer carcasses investigated, ruled algae-poisoning definitely out as the cause of the deaths, or even as a complication in the deaths. Doctor Gill's diagnosis of "septicemia" on former investigations is also strongly in support of our contention that malignant edema plays a definite rôle in the losses of deer in this park. The Conservation Department did not provide the necessary funds to have the studies pushed to the logical conclusion of proving the pathogenicity of the germ isolated, for deer, or at least for larger ruminants.

Of course, it would be unwise to conclude from the findings in the few deer examined at the close of the deer-enzootic, that all the previous losses were likewise due to *Clostridium* infection, or that algae-poisoning can be ruled out entirely as a potential cause in the earlier losses. Recent observations at the Veterinary Division of the University Farm, Saint Paul, Minnesota, seem to indicate that waters in which certain algae are found are toxic at certain times only, that is, the toxic principle will disappear upon putrefaction of the algae. We are well aware of the significance of these observations, and believe that if losses of deer should continue at the Roosevelt Game Preserve under circumstances similar to the ones

just discussed, at some future season, the careful examination of the floral plankton of these water-pools for toxic algae will become mandatory for the purpose of accurately ascribing the deaths during an enzootic to the various causes actually involved.

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The Electric Cautery in Veterinary Surgery

The Electric Cautery is a valuable aid in many veterinary surgical proceedings. Fortunately, electricity is found on most farms in this section, so the average practitioner is in a position to avail himself of the increased efficiency made possible by recent improvements in cautery equipment.

Excellent transilluminating lights are available for use with the electric cautery. These lights are supplied with extensions for all body cavities and are very useful in veterinary practise. The practitioner, after using the improved equipment referred to, will wonder how he ever got along without it.

Leucorrhea in cows and mares is treated with outstanding success by cauterizing the cervix about three times at ten-day intervals. The procedure is very simple and no anesthetic is required. Results are so gratifying that this method becomes a routine treatment.

Scirrhus cord removal on pigs, with the cautery knife, insures success that invariably brings praise from the owner of the stock. Whereas, the value of the animal is small, the resulting satisfaction to the client, more than offsets the small fee collected, as additional work will surely follow.

The electric cautery technique, when applied to the removal of tumors from the membrana nictitans in horses, is so simple and satisfactory that the owner becomes a walking advertisement of your skill.

Small melanotic tumors are removed with success and safety, as the chance of spreading melanin is lessened since the operation with the electric cautery is bloodless.

A veterinary friend recently told me of spaying a bitch. The patient was an overweight house pet such as ordinarily bleeds excessively. In this case he performed the entire operation with the electric cautery; there was no hemorrhage and the abdominal opening healed very rapidly.

The cautery minimizes chances of infection, eliminates hemorrhage by sealing the vescular areas and is obviously the safest method for removing new growths.

After using modern electric cautery equipment, you will agree that there is no limit to the uses to which this valuable instrument may be successfully applied.

Dixon, Iowa. W. C. Vollstedt,

Urethral Calculi in Sheep and Goats

The concrements were always found lodged in the processus urethrae.[62] The symptoms were: anorexia, strangury, unrest, uremia. If uremia has not set in, then recovery may be obtained through amputation of the processus urethrae, immediately anterior to the calculus. Prevention may be accomplished by dietary measures.

Electrical Treatment for Mastitis

In preliminary experiments the author[66] found that the mastitis streptococci can be killed with short electrical waves. The efficient optimum is a wave length of 3.6 meters. The addition of saline solution or boric acid solution to the milk increases the conductivity of the milk for the wave rays and, thus, the efficiency of the treatment.

[62] Hoflund, S., 1934. Ueber Harnsteine im wurmförmigen Anhange des Penis beim Schaf- und Ziegenbock. (Calculi in the processus urethrae of ram and he-goat.) *Arch. Tierheilk.* 67(4):340-346.

[66] Schmidt-Hoensdorf, F., 1933. Mastitisstreptokokken und Kurzwellenbestrahlung. (Short wave rays in the treatment of mastitis.) *Deutche Tierärztl. Wochnschr.* 41(5):69-71.

Diseases of the Mouth and Esophagus of Carnivora

By H. J. MILKS,
Ithaca, New York

BEFORE starting a discussion of some of the specific diseases of the mouth and esophagus, it seems well to place some emphasis upon the examination of the digestive tract as a whole. One of the ambitions of a practitioner is to make some sort of diagnosis, and usually he must make a differential diagnosis. To accomplish this he must be a good detective, must be able to follow certain clews and not become befogged by others until finally, by sifting the evidence, he can lay his hand upon the criminal that is causing the confusion, or in medical parlance, make a diagnosis. He will get his clews or leads but will have to be able to follow or check these clews with evidence obtained from a physical examination and many times will find it necessary to resort to microscopic or chemical examinations. It is the ability of the trained veterinarian to make the examinations, and to interpret symptoms that make his judgment better than that of a layman. Nearly all the readers of this article have been in practice long enough to know that there are very few diseases which can be diagnosed from the history and symptoms alone, or put in other words, there are mighty few symptoms that really point to a specific disease.

Without going into the details of an examination of the digestive tract, it is sufficient to point out certain things that should be done as a routine. First, examine the mouth for odor, lesions, exudate and foreign bodies between the teeth. Check the teeth, tonsils, and pharynx. Push the tongue to one side and then the other, and examine for presence of cysts (ranulae). Palpate the pharynx externally for foreign bodies. Look at the abdomen from above and from the side. If the abdomen is distended and the flanks sunken, there are grounds for suspecting some abnormal condition in the abdomen, enlarged liver, tumors or ascites—not fat.

We do not feel that an examination of the abdomen is complete without a thorough palpation. Each has his favorite method of doing this. Some prefer to use both hands directed from above downward. Others prefer to use one hand, reaching up from the under side of the animal with thumb on one side of the abdomen and fingers on the other. It is not always easy or even possible to palpate the stomach unless it is dilated or distended. The spleen may be made out on the left side, but may be confused with the liver, which may be felt from either or both sides.

Always feel over the intestines for the presence of obstruction. Frequently some form of obstruction is easily found although its exact nature cannot be determined, that is, whether it is a foreign body, intussusception, or what. Yet at times, the sensation imparted to the fingers is fairly suggestive of a foreign body, and at times of intussusception. Occasionally a foreign body may change position so that it can be felt sometimes and not at other times. This means that one negative examination is not enough to cause one to give up, if there is a suspicion of such a body. X-ray examination is extremely useful but not always conclusive because some substances do not show up with this method. Of course, the results of palpation or X-ray are never positive. They point to something definitely wrong. An exploratory laporatomy is the only thing that will clear up such a diagnosis. There is one point in the examination of cats that must be kept in mind. Their kidneys are floating, and may be easily mistaken for foreign bodies. Finally one should never do an exploratory operation unless he is prepared to correct any condition found that admits of correction.

Hare Lip

This is a congenital condition, sometimes affecting one and sometimes both lips. It is often associated with cleft palate, and may be so severe as to interfere with the puppies' nursing. Whether hare lip occurs more frequently in Boston Terriers than in other breeds of dogs, we cannot determine, although all of our cases have been confined to animals of that breed.

Treatment.—We have never attempted treatment in those cases associated with cleft palate. The treatment outlined here is for those seen in half grown or adult animals, and which constitute only a disfigurement. Our plan has been to operate under morphine plus a local anesthetic, injected around the cleft. We scarify the edges well with scissors or knife; then bring the scarified edges together with silver wire sutures, and mold or bend the wires so as to bring the edges into the desired position. The silver does not suppurate nor tear out easily, and may be bent at different times to hold in proper apposition. Another method is to pass a pin through the clefts, and hold it in place by figure-eighting a silk thread around it. Not all cases will be cured with the first trial. The operation is not 100% effective, and may have to be repeated. Most cases will heal with little disfigurement.

Warts in the Mouth

By these are meant the papillomata which are so common in young animals. These growths are supposed to be infectious, but so far as I know, their cause has not been absolutely determined. It is assumed that they are due to a filterable virus as is the case with warts on cattle and on people.

Treatment.—The treatment for warts is described as medicinal and surgical. The medicines ordinarily recommended are arsenic and iodine. Since the warts often appear rapidly, and disappear just as suddenly, one is never certain of the benefits of medical treatment. Our plan has been to snip them off with scissors, and touch the stump with a cautery or to burn them off with a cautery. When they are present in such numbers that it does not seem best to remove so much mucous membrane at one time, we remove what we consider a sufficient number, and leave the rest for another time. The mucosa heals promptly, and we then remove more. We have seen cases in which we did not believe it feasible to attempt to remove them surgically, and it may be interesting to note that these cases have never recovered under internal medication.

Ranula

This is a soft, fluctuating, thin-walled, painless swelling which occurs on one side and under the tongue. There is some controversy as to whether ranula is a real cyst or, as some claim, a salivary cyst of Wharton's duct. In our experience, they have been true cysts, resembling the so-called honey cysts, seen further down the neck. The content has the same characteristics, and occasionally one has to dissect one of the latter, way up into the sublingual region. We have encountered those which might have been described from their location as either honey cysts or ranulae.

Treatment.—We have never had any success with any other treatment than complete extirpation. If incised, they usually recur. When iodine is used, it seems almost impossible to destroy the entire secreting surface, and after a few weeks of seeming success, the cyst fills again. It is claimed that a heavy suture or two, passed through the walls of the cyst, and tied on the outside of the wall may be successful. In this instance, it is hoped that a permanent opening will form around the sutures before they are sloughed out.

Pus in Antrum

This term is a misnomer since the dog has no antrum in this position. The pus is really between the two plates of bone. Nevertheless, for the convenience of discussion, the term will be used here. Common usage will, no doubt, continue the employment of the term. The symptoms of this condition are a swelling, abscess, or discharging sore just below the eye. Usually there is a history of inability to heal the sore or to keep it healed, but in some cases only a hard swelling or bulging of the bone is seen beneath the eye. Upon probing the lesion if it is open, one notices that the probe penetrates bone, and

passes in the direction of the molar teeth. The cause is almost invariably located in the large shearing upper molar, and the lesion will not remain healed until this tooth has been extracted, although in many instances the tooth appears sound. Extraction of these teeth is not easy, but may be facilitated by cutting around the gum, and by splitting the tooth transversely. After extraction, make sure that there is a sufficient opening between the sinus and the tooth cavity, and if necessary, enlarge it. Clean daily with an antiseptic. If the apparently sound teeth found in this condition are broken, a decayed spot will invariably be found within them.

Foreign Bodies in Mouth and Pharynx

This seems like a simple thing to speak of in this place, but nevertheless it is important to remember to look. We have had a dog sent in for black tongue that recovered promptly after removal of a bone from between its teeth. In another instance, a cat was able to shut its mouth after the removal of a loose molar. In this instance, the owner gave the history of a sick animal and attributed it to eating too much fur from a rabbit. This particular animal appeared as though the jaw were broken but, upon examination, we noticed that the cat moved the jaw, but could not entirely close the mouth. Nothing could be found between the teeth, but after a little probing a loose molar was discovered. It had simply dropped down enough to cause all the trouble. Needles and thread are frequently found in the tongue or back part of the mouth of puppies and young dogs; not so frequently in older ones. We make a practice of examining thoroughly the tongue and throat of all animals which suddenly show symptoms of throat irritation. Usually this examination is negative, but occasionally we are rewarded by finding a needle. On one day we took needles from two different dogs. A cursory examination is not sufficient in these cases. Most dogs require a narcotic or anesthetic before a complete examination can be made. Sight alone is not enough. One should always feel the parts thoroughly. A pricked finger is sometimes the first reward of such a search.

The symptoms of obstructions in the pharaynx are well marked, and the history helps, yet it pays to look the part over carefully whenever there are symptoms of sore throat, or the animal is hungry but cannot swallow.

Obstructions in the Esophagus

Symptoms.—The symptoms vary with the position of the obstruction. Anorexia is said to be common in all cases of pharyngeal or cervical choke, although we just had a case of pharyngeal obstruction in which the animal was hungry but could not eat. In the deeper forms the dogs are often hungry. Coughing, choking, gagging, and repeated attempts at deglutition are more pronounced in obstruction of the upper part of the esophagus. When the obstruction is in the pharynx, the head is outstretched; there are increased swallowing motions, salivation, retching, choking, and in some cases suffocation. In cervical choke there is less swallowing, less salivation, and less retching than in the case of obstruction of the pharynx.

When the body is in the thoracic region or just anterior to the stomach, the above symptoms are less marked or entirely absent. The animal is often ravenously hungry, but is unable to retain anything except liquids, and not always these. He will eat, swallow and almost immediately return the material. The regurgitation is very prompt and is diagnostic of some obstruction. (See case reports by Doctor Blamey, May issue, page 198.) If the obstruction is not complete, he may retain liquids, but not solids. We have seen this inability to retain food as the only symptom shown, and have had it diagnosed as gastritis, and as worms.

Diagnosis.—This may sometimes be made from the history, but unless the owner has actually seen the animal get into trouble while eating a bone, the statement that the dog has a bone in his throat is usually misleading. The location of the body makes some difference in ease of diagnosis. The obstruction may be felt in the pharynx through the mouth or side of the neck, or may be seen often if the tongue is pulled forward. If in the cervical region, the bulg-

ing or swelling can be noted or the body palpated easily. The symptoms which are most pathognomonic of obstruction in the thoracic region are: immediate regurgitation of food after eating, and the ability to swallow and retain liquids and not solids. It other words, when an animal appears hungry, eats and swallows food, but immediately returns it, or where it can retain liquids but not solid food, look for obstruction. In cases of doubt, or to clinch a diagnosis, pass a probang or stomach tube. To do this, hold the mouth open with tapes or a speculum, raise the head so that the mouth and esophagus are in a nearly straight line, and pass the tube into the upper middle part of the mouth. When it reaches the pharynx, the animal will invariably swallow; then pass it on down to the stomach or until the obstruction is reached. This is an easy procedure, and one that will give almost definite results. The passing may be preceded by a narcotic or anesthetic if desired. One can feel the tube in the esophagus, or in case of doubt as to whether in the trachea or not, immerse the free end in a dish of water. If the tube is in the trachea, bubbles of air will pass through the water during expiration.

One difficulty is estimating when the stomach is reached. The esophagus passes through the upper third of the diaphragm, a little to the left of the median plane, and enters the stomach at the eleventh or twelfth dorsal vertebra. As the dog has thirteen ribs, one can begin at the posterior one, and count forward one or two, trace this up to the vertebra and the opening will be ventral and well up toward the back, or it will be about opposite the ninth or tenth rib at its upper third. Measuring from the incisor teeth to the above point will give the approximate length of probang to pass in order to reach the stomach. If an obstruction is reached, mark the tube where it enters the mouth, then withdraw and lay it on the side of the dog with the marked place at the incisor teeth. The end will then quite accurately give the location of the obstruction. There are causes of obstructions other than foreign bodies. Gow (VETERINARY MEDICINE May, 1929, page 227), described a condition due to a congenital malformation in which there was a diverticulum of the esophagus just anterior to a constriction of the esophagus by the ductus arteriosis above, and the aorta and pulmonary artery below. Stricture may also be due to scar tissue which in turn resulted from the healing of a lesion in the esophagus.

Prognosis.—The prognosis depends upon the nature of the obstruction, length of time it has been in the esophagus and its location. Generally the prognosis is more favorable in the pharyngeal than a cervical choke, and more favorable in a cervical than a thoracic. If the body has sharp points, it will soon set up inflammation or injure the esophagus beyond repair so that naturally the outlook is better with smooth than sharp bodies. The size of the offending body is also important. We have seen a small pekingese puppy suffocate on account of a chop bone in the pharynx. This particular bone (VETERINARY MEDICINE April, 1932, page 159) was so firmly imbedded in the tissues that it could not be removed without being broken up, and the puppy died before that could be done. A tracheotomy might have been useful, but no such outcome was expected, and the puppy died before it was attempted. The sooner the body is removed, the better, since in only rare instances will fatal necrosis be avoided if it is left in more than a few hours. In one instance we had a recovery follow removal of an obstruction that had been in for ten days, but this was a round body that did not completely prevent the passage of liquids, and of course, could not have caused much damage.

Treatment.—When the obstruction is in the pharynx an attempt should be made to remove it through the mouth. If of such shape or in such position that this cannot be done, one might break it with a bone cutter, but during such a procedure the animal is liable to suffocate unless tracheotomy is previously performed. Since suffocation occurs only occasionally, and many times without any previous alarming symptoms, the above precaution is not usually thought of until the animal has passed out, and the veteri-

narian thinks about what might have been done if he had thought of it in time.

If in the cervical region, attempts should be made to return it to the mouth, or in some cases to push it into the stomach, but the last measure is always hard medicine except in special cases where the nature of the body is known. Fish bones or other small objects may sometimes be removed with the horsehair or bristle probang. If the obstacle cannot be removed by these means, proceed at once to an esophagotomy. The operation is briefly described as follows: Pass a probang or sound down the esophagus against the body. Cut down upon this from one side, and it makes little difference which, separating the muscles instead of cutting them. Then make a longitudinal incision in the esophagus, long enough to permit the removal of the foreign body. Treat the operating area as an open wound. A few sutures may be placed in the esophagus if desired, but they are not necessary in most cases. For a successful termination, these cases must be operated upon early. Delay is dangerous if not fatal, and certainly is a greater source of danger than the operation itself.

A foreign body may be removed from the thoracic region either through an incision in the esophagus just as it enters the chest or more often through a gastrotomy. In the latter case, laparotomy is performed just posterior to the sternum, the stomach brought out and incised transversely on its greater curvature, and an attempt made to remove the body with instruments passed into the esophagus, through the cardiac orifice. We have found long dressing forceps and a small obstetrical hook quite useful, and in one instance succeeded in removing a bone that was six inches anterior to the stomach. Gentle traction should always be used so that the tissues will have a chance to dilate and the least possible injury may be done by the operation. After the body has been removed, suture the opening of the stomach with two rows of sutures: the first, a continuous row that penetrates all three coats, and the second a continuous Lembert suture. We prefer a No. 0 medium hard chromic gut welded to a round pointed needle for this work. This is the gastro-intestinal suture of different manufacturers. With it, there is no doubling of the thread or gut, and consequently, much less laceration than with ordinary needles. However, silk or certain other suture material may be used if desired. The round pointed needle is important as it pushes its way through the tissues, and does not cut them. The abdominal opening is closed in the usual manner.

* * * *

Ruptured Diaphragm

The patient, a two-year-old, male, coon hound was first seen June 16, 1932. This date is important, as will be seen later.

History.—The animal had disappeared for two days and when he returned home had an injury to the right fore-foot and a swelling on the right side; had probably been struck by a car.

Examination.—There was an injury with laceration of the right fore-foot and a swelling on the right side. The swelling was soft, fluctuating five inches long by three inches and reducible. Reduction showed this condition to be a hernia between the twelfth and thirteenth ribs.

Treatment.—When the hernial sac was opened, the animal collapsed but was revived by artificial respiration. The opening was kept closed as much as possible and the animal rolled to an upright position to facilitate easier breathing by lessening the pressure on the left lung. The intestines were replaced in the abdominal cavity and a thin sheet of omentum was sutured with catgut across the opening between the ribs. The wound was packed with gauze, and the skin sutured. The pack was removed the next day, and the wound responded very quickly to treatment. The dog was discharged on June 23 in good condition with no external evidence of a ruptured diaphragm.

DECEMBER 6, 1933, the hound was again seen. The present owner had recently purchased the animal. The new owner reported that the dog had a very poor appetite and was gradually losing flesh. The feces were watery and clay-colored. The owner had noticed that after a hunt the dog

appeared very dull and tired and had no control over his bowels.

Examination.—The animal was in a fair condition but showed a slightly tucked up abdomen. There was no evidence of interference in the breathing while hunting or resting. There were two enlarged organs or glands which were easily palpated in the abdomen. The intestines contained very little food. One enlargement was palpated in the region of the liver, and the other was felt in the sub-lumbar region and was easily moved. These enlargements were suspected of being tumorous growths. The owner was advised that nothing definite could be determined and was given a guarded prognosis. He wished to use the dog for hunting, so the animal was sent home with an antidiarrheal mixture and tonic.

THE hound was again presented for treatment on Jan. 9, 1934, with the statement that he showed no improvement. The two growths previously noted were easily palpated and had not increased in size.

Blood Examination.—Erythrocytes, 5,575,000. Leucocytes, 10,570. Differential count: Lymphocytes, 4.5%; Polymorphs 95%; Eosinophils 0.5%.

The animal was placed under observation, and on Jan. 12 an exploratory laporotomy was made under morphine and ether anesthesia. A three-inch incision was made on the median line posterior to the umbilicus. Examination through the incision revealed a very pendulous left kidney and a liver twice its normal size. On checking over the intestines, it was discovered that only the floating and terminal portions of the colon were present in the abdominal cavity. The incision was enlarged anteriorly, and a round opening three inches in diameter in the diaphragm on the right side was made out. The rent was located in the musculature portion of the diaphragm just ventral to the right crus. The rim of the rent was thickened and smooth, which indicated that the rupture was of long duration.

On the right side of the thoracic cavity, all of the small intestine, cecum and portion of the colon were found. The right lung was collapsed and evidently had not functioned since the original injury in June, 1932. The animal was destroyed.

Autopsy.—The liver was greatly enlarged and degenerated. One part of right lobe was well separated from the rest of the organ. This was the body felt near the liver upon examination. The left kidney was normal but very pendulous. The right kidney was normal and in its usual location. The stomach was pulled out of position, and the mesenteric vessels were greatly enlarged. The outer portion of the rent was so close to the ribs that very little tissue was available to attempt suturing the opening. A portion of the omentum was closely adhered to the outer wall of the opening.

Comment.—No doubt the hernia of the diaphragm dated from the original injury. The intestines had slowly worked their way into the thoracic cavity until finally atresia of the bile duct occurred and the mesenteric vessels compressed to cause the digestive disturbance. It was surprising how the dog hunted so well and lived so long with only one lung and such extensive displacement of the intestines.

Ithaca, N. Y. B. J. Pomeroy.

Do You Remember?

1, Question. What are "grass-eggs?"

Answer. "Grass-eggs" are those eggs in which the yolk has a greenish hue or green spots. This is usually caused in the spring by the hens eating "shepherd's purse" (*Bursa pastoris*), although other mustard plants sometimes produce the same result.

2, Q. What is the most destructive poisonous plant in the world?

A. Because of its very wide distribution and the very potent poison found in the whole plant, *Conium maculatum* is generally recognized as being the most poisonous plant. Some of the more common names of this plant are: poison root, snakeweed, spotted parsley and poison hemlock.

3, Q. What is cumarin?

A. Cumarin is the poisonous principle found in sweet-clover; when taken in sufficient quantities, it causes the blood to lose

its ability to clot readily. This is one cause of "bleeders" in animals.

4, Q. In what sections of the United States are each of the following plants most commonly found: bracken; larkspur; loco; lupine; white snakeroot; and whorled milkweed?

A. Bracken (*Pteris aquilina*) is most commonly found in the northern states; larkspur (*Delphinium* spp.) in the Rocky mountains and adjacent territory, especially westward; loco (*Oxytropis* and *Astragalus* spp.) in the great plains section; lupines (*Lupinus* spp.) in the mountain ranges and foothills of the west; white snakeroot (*Eupatorium urticaefolium*) mostly in the eastern part of the United States; and whorled milkweed (*Asclepias galiodes*) is most commonly found from central Colorado and central Utah south through Mexico.

5, Q. How may death camas be differentiated from wild onions?

A. The chief differences are that death camas (*Zygadenus* spp.) has yellow flowers, grass-like leaves and an absence of an onion odor, while wild onions (*Allium* spp.) have pink flowers, onion leaves and a typical onion odor.

6, Q. To which of the domestic animals are the following plants most injurious: young cockleburs (*Xanthium* spp.), death camas (*Zygadenus* spp.), horsetail (*Equisetum* spp.), larkspur (*Delphinium* spp.), loco (*Oxytropis* and *Astragalus* spp.), lupine (*Lupinus* spp.) and whorled milkweed (*Asclepias galiodes*)?

A. Young cockleburs are most injurious to young pigs, death camas to sheep, horsetail to horses (especially colts), larkspur to cattle, loco to horses, lupine to sheep (although many cattle are also poisoned by lupine) and whorled milkweed to sheep.

7, Q. When herding sheep across a large area of poisonous plants, should they be driven rapidly or slowly?

A. Sheep should be driven slowly across an area of poisonous plants so they can spread out and choose their feed more carefully. When driven fast, they grab at any vegetation available and in this way may ingest poisonous plants.

8, Q. When are animals on pasture most likely to feed on poisonous plants?

A. Plant poisoning of animals on pasture is usually due to one or more of the following conditions: (a) when the animal is very hungry; (b) when the pasture is overgrazed; (c) when the poisonous plants are more prominent or accessible than other feed; (d) when the poisonous plants are the first green plants accessible in the spring or the last in the fall; (e) when the poisonous plants remain more succulent in the fall or during drouth than other feed; (f) and when the poisonous plant has no objectionable taste or texture.

Wesley O. Keefer.

Akron, Ohio.

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Acute Intestinal Obstruction

Case No. 193,766. A four-months-old, English Setter, female puppy, one of a litter of six, was seen on the fifth day after the owner noticed that the dog was not eating and appeared very depressed. The first symptom the owner noticed was that the puppy was dull, lay around most of the time, and vomited after eating. He gave the dog worm medicine and castor oil without consulting a veterinarian. This caused the animal pain as shown by whining and uneasiness. The animal had no bowel movements from the castor oil, and for the last three days had not attempted to eat.

Examination.—When the dog was first seen, she was very listless and stood with her head down. She did not appear to be in pain. Pulse and respirations were normal, and rectal temperature was 100.6° F. Abdominal palpation revealed a hard mass in the intestines which was several inches in length and of sausage shape. Palpation of the abdomen did not seem to be painful to the dog. A hard mass of feces could be felt in the rectum. An enema removed the feces, which were covered with mucus. The obstruction could not be reached with an irrigating tube.

Diagnosis.—Acute obstruction of the in-

testines due to a foreign body was diagnosed for the reason that the object could be felt easily, and it was freely movable with the intestines.

Treatment.—The dog was given one-fourth grain of morphine sulphate, and in twenty minutes an exploratory laparotomy was performed under ether anesthesia on the median line. The part of the intestine involved was removed from the abdominal cavity and wrapped in sterile towels wet in warm saline solution. About a foot and one-half of small intestine was found to be reddened and dilated to a diameter of about two inches. A transverse incision was made about half way through the intestine over one end of the obstruction, and a piece of cloth was removed, evidently a sausage covering, which was about thirty inches long and six inches wide. A piece of charcoal an inch in diameter was wrapped in the posterior end of the cloth. The involved part of the intestine was greatly dilated, thickened and very much congested, and the peritoneal surface was covered with a fibrinous exudate showing quite extensive peritonitis. The mesenteric vessels were also greatly congested. The intestine was sutured with two rows of continuous, Lembert, catgut sutures, and the intestines stimulated with hot saline solution. The abdominal wound was sutured as in any ordinary laparotomy. One hour later the dog was given 100cc of sterile physiological salt solution subcutaneously.

The next morning the dog was dead. Autopsy revealed that the intestinal incision was about fourteen inches anterior to the cecum. For about a foot anterior to the incision the mucosa of the small intestine was thickened and edematous. The intestine anterior to the obstruction was filled with gas and fluid. There was a diffuse peritonitis extending from the involved portion of the intestine. Massive fibrinous adhesions were present.

Comment.—If we had seen this case and operated three or four days earlier, the operation might have proved successful. This dog had gone so long that peritonitis had developed and the animal was too weak to recover from the shock of operation.

Case No. 195,199. A similar case of acute intestinal obstruction was seen in a two-year-old, English Setter. For the past few days the dog had vomited several times and had been very restless. He would stretch, whine, and lie in different position. The animal would not eat except an occasional morsel handed to him. The symptoms and history pointed to an obstruction, but none could be found on abdominal palpation. For this reason gastritis was diagnosed and carminatives prescribed with milk of bismuth. Several days later the dog was again seen. He was not yet eating and was getting thinner. At this time abdominal palpation was again negative. A digestive was prescribed with the above treatment.

Examination.—Three weeks from the time the dog was taken ill he was again brought in for examination. For the past few days the dog had been straining and whining as if in pain. He had no appetite and was very thin. No vomiting had been noticed for several days. His pulse was fast, temperature 102.2° F., and his eyes were a little sunken. This time abdominal palpatation revealed a hard round object of about an inch in diameter in the intestines.

Diagnosis.—Acute intestinal obstruction could be positively diagnosed after feeling the foreign body, which evidently had worked back into the intestines.

Treatment.—The dog was given one-fourth grain of morphine sulphate. Twenty minutes later the dog was placed on the table and the operation performed under local anesthesia. The incision was made in the left flank about an inch and one-half from and parallel to the last rib. The large colon was first located and was found to be filled with firm lumps of feces. These were squeezed and broken up. The small intestine was then located, and in the lower part of the jejunum a hard object was felt. Anterior to the obstruction the intestine was dilated and reddened. A transverse incision was made half way through the intestine at the side of the obstruction and a half of a rubber ball was removed which proved to

be part of a toy billiard ball. The intestinal incision was sutured with two rows of Lembert sutures using number 0 ten to twenty day catgut. The laparotomy wound was sutured in the usual manner and bandaged over a dry boric acid pack. Three hours later 100cc of physiological salt solution was given subcutaneously.

Food and water were withheld for the first twenty-four hours. There was a rapid improvement in his condition. On the third day the dog's appetite had returned and he was led outside for exercise. The skin sutures were removed on the fifth day. The sixth day after the operation the dog was sent home in good health.

Ithaca, N. Y. H. L. Brown.

Anaplasmosis-Like Disease in Swine

During the past summer, while assisting my father in practice, we encountered a mild outbreak of an anaplasmosis-like disease in three herds of swine during the month of July.

The first, a herd of 200 shotes, averaging about 100 pounds, was being rough fed on corn and grass. Only two animals of this herd showed symptoms of disease, temperature of 105°F., great depression, weakness, dyspnea and ictero-anemia of the mucous membranes, which was quite apparent. Not knowing what the condition might be, the owner was advised to immunize the animals against hog cholera, giving both serum and virus. The two sick animals recovered in two days. No other animals in this herd were affected.

A few days later a similar outbreak was encountered in a herd of twenty-five pigs weighing approximately 100 pounds and located about a mile and one-half from the first herd. Five of these hogs showed symptoms similar to those mentioned above, except for the temperature; three having a temperature of 105°F., one 102.5°F. and one 99.5°F. The affected animals were completely exhausted by walking a short distance, at which time they showed marked depression and dyspnea. All shotes in this second herd were in good condition; being fed corn and milk, and on bluegrass pasture.

One of the sick animals was sacrificed and taken to a veterinary diagnostic laboratory. The postmortem findings were: icterus, pale blood, yellowish serum, softened enlarged spleen, yellowish discoloration of liver and bile stained intestinal contents. Microscopically the blood picture was almost identical to that observed in anaplasmosis of cattle. The red blood cells contained small cellular inclusions, from one to several in number and located both centrally and marginally. In some cases the red blood cells appeared to be completely engorged with these small cellular, pin-point bodies of varying shapes, some coccoid, some bacilliform, and others ring-shaped.

Thinking that this condition might be spread by lice, the herd was sprayed with a 5% creolin solution. No additional cases occurred in this herd and all affected animals recovered in a week.

The third outbreak occurred in a near-by farm, in a herd of seventy-five hogs weighing about sixty pounds. Only three were noticeably sick and they showed the same symptoms as the other groups, including temperatures of 104° to 105°F. These shotes were fed a well balanced ration of corn, skimmilk, shorts and tankage and were running on good bluegrass pasture. All recovered in a few days.

This seems to be an ailment which has become more prevalent in the last few years, and about which, at present, there is little available knowledge. The morbidity rate in an affected herd apparently is low and the case mortality very low. Cold weather seems to check outbreaks. The only previous description, to my knowledge, on this subject is that given by L. P. Doyle, of Lafayette, Ind., in the November issue of the 1932 Journal of the American Veterinary Medical Association, in which he has shown some blood pictures which represent very well this condition. We shall be greatly interested to hear further reports dealing with this condition.

W. E. Dicke.

Louisburg, Kans.

Surgical Excision of the Eye

By E. I. LONG, Manhattan, Kansas.

REMOVAL of the eye is indicated for the relief of severe traumatic injuries, abscesses, malignant tumors and other affections that do not respond to medication. Malignant tumors are common in the eyes of cattle, particularly in the Hereford breed.

Formerly excision of the eye was considered a major operation to be performed only under general anesthesia. The diseased eye was removed, leaving the glands in the surrounding structures undisturbed and functioning. This method left a constantly draining socket—an unsightly hollow in the side of the face which invited infections of all kinds and attracted flies. The operation used at present consists of the removal of the eyeball, the tarsal glands, and the palpebral conjunctiva. This removes all secreting glands, facilitates rapid healing of the wound, and leaves smooth skin over the area.

Local anesthesia is entirely satisfactory for this operation. The animal should be confined in lateral recumbency, either on the ground or an operating table, with the operative area uppermost. The eyelids and the surrounding skin are shaved, washed and disinfected with a 1-500 solution of bichloride of mercury or any other desirable antiseptic. When the operative area is dry it is painted with tincture of iodine.

Local anesthesia is induced by the use of a 2% solution of procaine containing 1-5000 adrenaline chloride, to assist in control of the hemorrhage. For the injection of the anesthetic a glass, hypodermic syringe, with a 2-inch, 22-gauge needle is used. The anesthetic is injected into both lids, ¼-inch from, and parallel to, the borders. Four injections of 2cc or more

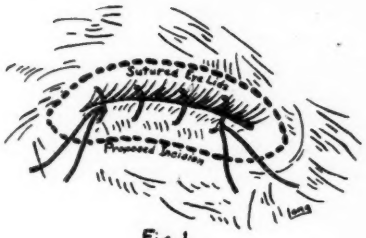


Fig. 1

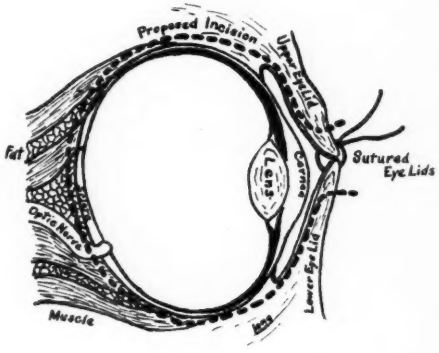


Fig. 2

each are then made into the depths of the orbit, posterior to the eyeball. The operation is not commenced until anesthesia is complete, which is indicated by entire loss of corneal or palpebral reflexes.

The enucleation is started by suturing together the edges of the upper and lower lids, by a continuous suture (Fig. 1). Silk sutures are used throughout the operation. A small, very sharp knife is used. An incision is made ¼-inch from and parallel to the margin of each eyelid, through the superficial structures to the conjunctiva, which is recognized by its bluish-white appearance. The incisions are united at points ¼-inch from the lateral and medial canthi. The dotted line in Fig. 1, marks the line of the incision. Excess blood is removed with small pledgets of absorbent cotton. When the conjunctiva has been exposed, the excised edges of the eyelids are grasped with tissue forceps and drawn gently outward. The dotted line in Fig. 2, shows where the conjunctiva is next separated from underlying structures by blunt dissection which

is carried past the fornix, the point where the conjunctiva reflects onto the sclera. This leaves the ocular globe attached to the borders of the eyelids by the conjunctiva. The eyeball is fixed in position by the use of forceps clamped into the sutured borders of the eyelids. Curved scissors are used to cut the ocular muscles and optic nerve close to the eyeball which is then completely removed. The nictitans membrane is also removed at this time. Care should be taken not to disturb the periorbital fat.

Hemorrhage, which should not be excessive, may be controlled easily by sponging the cavity with absorbent cotton or gauze.

The orbit is packed with sterile gauze, impregnated with equal parts of iodoform and boric acid or iodoform alone. Next the cut edges of the lids are sutured together carefully with interrupted silk sutures, starting at the external commissure of the incision and leaving a ½-inch of opening at the medial commissure to provide drainage. At the end of 24 hours the iodoform pack should be removed through the drainage aperture and the cavity flushed with Bipp.

Bipp is a thick paste prepared as follows: Bismuth subnitrate, 8 ounces; Iodoform, 16 ounces; Mineral oil, 8 ounces. Mix the bismuth subnitrate and iodoform thoroughly and stir this mixture continually while the mineral oil is being added.

The orbital cavity fills rapidly with granulation tissue which becomes attached to the denuded, posterior surface of the lids. The formation of scar tissue and healing takes from 10 to 14 days, at which time the sutures may be removed.

* * * *

FIGHTING FATIGUE WITH MILK

A drink of hot malted milk taken in the middle of the afternoon "peps up" the worker and reduces that "last hour slump," according to the findings of Donald A. Laird, director of the Psychological Laboratory of Colgate University.

A Peculiar Urinary Calculus

While accompanying Dr. A. H. Krull of Wakefield, Nebraska, to treat a case of "lumpy jaw" in a fat steer, a large Percheron mare weighing about 1,700 pounds, was led from her stable, and the question asked, "Doc, what makes this mare strain and attempt to urinate so often?" By questioning the owner we found that the mare had lost much weight in the last few months, and that working her was annoying because of her frequent attempts at urination. She was a six-year-old and had been a valuable work animal. Upon further questioning we found that she had previously been treated for kidney trouble by two other veterinarians.

We ordered a pail of warm water and prepared to make a vaginal examination of the bladder. With sleeves rolled, the right hand was washed and well lubricated with soap. Upon entering the vaginal canal we noticed the mucous membrane to have a normal pink color. On palpation of the bladder, we encountered a large, hard, freely moving, lemon-shaped object within. This we diagnosed as a urinary calculus.

Explaining this condition to the farmer, we informed him that we would return the following day prepared to remove the foreign object. We returned, taking with us a pint of olive oil, equine chain ecraseur, 10-inch rat tooth forceps, a two-ounce dose syringe, stomach pump and a small rubber tube. The mare was placed in a single stall and breeding hobbles applied. A preliminary vaginal examination was made showing the bladder to be partially distended with urine and the foreign object still present. The bladder was catheterized by means of the small rubber tube. Following catheterization, the sweet oil was injected into the bladder with the two-ounce dose syringe. The external urethral os was found to be exceptionally large. Following the oil injection, the chain of the ecraseur was introduced through the external urethral os and into the bladder. The right hand was again washed and lubricated and gently forced into the vaginal canal. The calculus was again found by pal-

pation and gradually worked within a loop of the chain. Upon tightening the chain some difficulty was found in keeping the calculus within the loop when pressure was applied. After a few attempts we finally succeeded in cracking it. However, to our astonishment, after releasing the pressure, the calculus was the same size as in the beginning.

The chain was tightened several times in an attempt to completely demolish the object and each time the calculus would assume its normal size after the pressure of the ecraseur was released. Tiring in our attempt to crush the foreign object, it was pulled forward toward the external urethral os and found to have an orifice in one end. The 10-inch, rat-toothed forceps were brought into use; the chain of the ecraseur was removed, and more oil injected into the bladder. Gradual traction with the forceps which grasp the rim of the orifice in the foreign body was applied and after the external urethral os became fully dilated it was brought forth.

The calcareous object, it was found to be the rubber bulb of a two-ounce dose syringe. The farmer looked in amazement and exclaimed, "Those d—— kids—that's where my rubber syringe went to!"

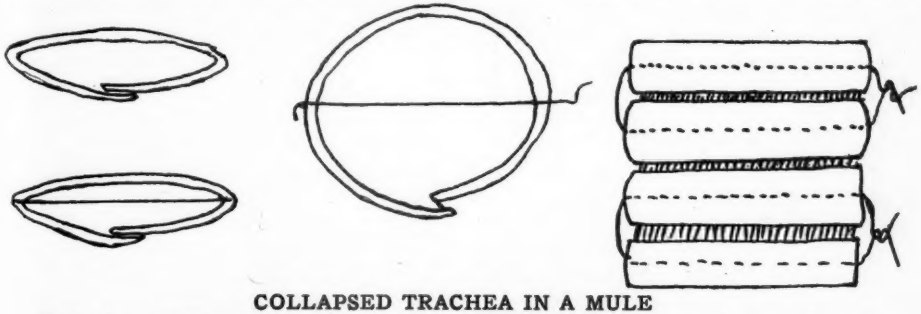
Very little hemorrhage resulted. The remaining calcareous material was washed from the bladder by means of clean water with the rubber tube and stomach pump. It was estimated that there must have been one-fourth of an inch of calcareous material surrounding the rubber bulb.

Six weeks later the owner reported that the mare had gained 150 pounds in weight and all symptoms of straining and frequent micturation had ceased. Doctor Krull presented this coated rubber bulb to the Pathology Museum of Kansas State College where it may be seen.

Wakefield, Nebr. Martin J. Busby.

Collapse of Tracheal Rings in a Mule

January 13, a mule suffering from collapse of the cartilages of the trachea was brought to the veterinary clinic at Kansas State College. The owner, a farmer, had worked the animal January 9, and noticed then that it seemed to be having difficulty in breathing, which was unusual. When continued rest failed to improve the mule's condition, the local veterinarian was called. He was unable to make positive diagnosis. The following day the mule's condition was much worse, the animal being in danger of death by suffocation. The veterinarian then diagnosed the ailment as collapse of the tracheal rings and inserted a tracheotomy tube to prevent suffocation. The condition was probably caused by feeding from an extremely high manger.



COLLAPSED TRACHEA IN A MULE

Left: above, collapsed tracheal ring; below, collapsed ring with suture in situ. Center: Ring drawn to approximate normal shape by tightening suture. Right: Manner of fixing sutures.

After a thorough examination at the clinic it was decided that an operation was necessary.

The areas on the sides of the neck where

the incisions were to be made were shaved and thoroughly cleaned with an alcoholic solution of bichloride of mercury, 1-1000, and then painted with iodine. A local anesthetic of 1.5 per cent procaine solution was injected into the area. The operation was performed with the patient in a standing position.

Incisions were made on both sides of the neck, through the skin and fascia, along the course of the trachea, just ventral to the jugular furrow, and about four inches posterior to the border of the mandible. This incision divides the sternocephalicus and omohyoideus muscles and is dorsal to the sternothyreoideus muscle, thus exposing the tracheal rings, which are covered with fascia, that must be removed. A long hypodermic needle was inserted at the extreme angle directly through the cartilage proper, then through the lumen and out through the opposite angle. Silver wire was passed through the lumen of the needle; the needle was then removed, leaving the wire in place. The next cartilage below was pierced in the same manner and the end of the wire threaded back through it. The ends of the wire were then twisted together, forming a single mattress suture enclosing the two rings. After five such sutures were taken, which was necessary in this case, the rings were forced back to their normal shape by manual manipulation. The wires were then tightened by an assistant. This takes considerable time as the rings can be forced back to normal only a little at a time, and must be forced slowly, each time the rings were forced the wires were tightened to hold them in place. A lapse of ten to fifteen minutes was necessary before forcing the rings again.

After the rings were forced into their normal shape, the long ends of the wire were removed and the wound packed with gauze and liquid bipp, which was prepared as follows:

℞	Bismuthi subnitratis	
	Iodoformi *aa*	3i
	Liquidi petrolati	3ii
	Petrolati	3i

M. Ft. Unguentum
Sig. Impregnate gauze

This gauze was held in position by three sutures through the skin, closing the wound as much as possible, and was left in position for twenty-four hours, after which it was removed and the wound closed by suturing permanently on the side opposite that from which the wire was twisted. After ten days the wire was removed, this being done by cutting one end below the twisted portion and then pulling the wire out. The silver wire used in this operation is quite flexible, which enables it to be removed readily.

In this operation there is considerable swelling of the tissues due to irritation caused by the manual manipulation necessary in forcing the rings back to normal shape. After the wire had been removed, the wounds were treated as open wounds. The case made an excellent recovery.

W. A. Thomson.
Coffeyville, Kan.

Actinomycotic Glossitis (Wooden Tongue)

A four-year-old Holstein cow was admitted to the veterinary hospital of the Kansas State College, October 13, 1933. The tongue was swollen to a degree that it could not be drawn into the mouth, and protruded three or four inches. The epithelium of the exposed portion was necrotic, resulting in exfoliation. According to the owner of the animal the tongue had been increasing in size over a period of about two months. The animal was weak, emaciated, and showed extreme depression. The cow had been unable to eat sufficient food for its needs for a month, and for about a week had been unable to either eat or drink.

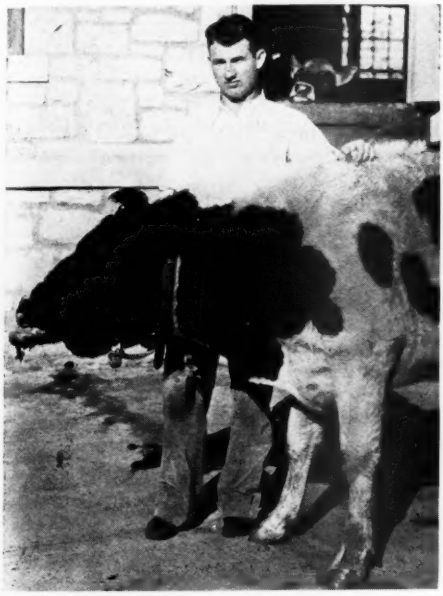
The case was diagnosed as actinomycotic glossitis, or "wooden tongue," and was treated as follows:

October 13—Given intravenously one-half ounce of sodium iodide dissolved in 100cc of distilled water, and 50cc of glucose. Then by means of stomach tube passed through the nostril, three gallons of water and one-half pound of sugar were given.

October 14—Two drams of Siomine, 2½ gallons of milk, and three gallons of water

were administered *via* the stomach tube. The animal was improved in strength and showed an interest in things about her.

October 15—One ounce sodium iodide was given intravenously, and a gallon of milk, two gallons of water, one ounce of



Actinomycotic Glossitis.

salt, 2½ gallons of bran gruel, and a quart of corn syrup were given per stomach tube. The surface of the tongue was painted with tincture of iodine. The animal appeared contented and stronger, also the pulse and respiration became regular and normal.

October 16—Again one ounce of sodium iodide was administered intravenously and two gallons of bran gruel and three gallons of water per stomach tube.

October 17—No iodide was given on this day, but four gallons of bran gruel, two gallons of milk, and four gallons of water were given through the stomach tube.

October 18-22—Daily treatments consisted in intravenous administration of from one-half to one ounce of sodium iodide in solution, and food and water by means of the stomach tube.

On the fifth day of the treatment the animal was able to move the tip of the tongue slightly, and from then on motility increased rapidly and the size of the organ decreased.

On the eighth day the animal was observed eating moistened bran and alfalfa hay. By the tenth day the tongue could be withdrawn into the mouth, and the patient was discharged from the hospital, practically well.

Manhattan, Kan. A. R. McDonald.

Retaining A Uterus After Prolapse

Sutures are an efficient but not a certain means of preventing a recurrence of a prolapse of the interus. If straining is violent, the sutures may be torn out by the great force of the expulsive effort. When there is little straining, sutures remain in position and are effective.

A method more effective than sutures in retaining a prolapsed uterus was used in the following case:

July 17, 1933, a four-year-old Holstein cow was treated for a prolapse of the uterus. Deep vulvar sutures were applied to retain the organ after replacement. The following day the uterus had to be replaced again, the sutures having been torn out by violent straining.

The cow was given an epidural injection of 30cc of a 1% solution of procaine to prevent straining while the organ was being replaced, and a truss applied to compress the vulvar opening, thereby offering an effective obstacle to further extrusion.

The truss is conveniently made from two pieces of cord or ordinary rope, one-half inch in diameter and 12 to 15 feet long. Each rope is doubled in the center, and the two are united by a large loop in their middle, so as to leave an oval space somewhat in the form of a ring, which will surround the vulvar opening. The two ends of one cord are then passed downward between the hind legs, on either side of the udder, and then forward and upward to meet and be tied together on the dorsal aspect of the neck in front of the withers, from which point they extend downward on either side of the

neck to form a collar. The ends of the other cord are carried upward on either side of the tail and tied together over the loins, then carried forward and downward to pass be-

tween the forelegs, and ventral to the sternum, are tied together and the ends passed upward and tied to the ends of the other cord constituting a collar. When so applied, the ropes exert a continued pressure when the patient arches her back to strain, yet allow micturation and defecation without discomfort to the animal.

The truss was removed on the third day. No traumatic injuries resulted from its use.

No trusses, no matter how skillfully contrived or adjusted, will hinder vaginal inversion of the uterus; all they can do is prevent the organ being suddenly protruded beyond the vulva and exposed to the air and irritating effects of extraneous material before it can be returned to its normal position. This, however, is an important achievement, and is a great step towards permanent retention. Besides, by maintaining the labia of the vulva in close apposition, the truss, if well applied, prevents the admission of air into the genital canal, and thus does away with one source of irritation. The apparatus does not cause any pain or inconvenience to the animal, and should be considered in retaining a uterus after prolapse.

Paul E. Chleboun.

Stanton, Nebr.

Dehorning the Milk Cow

There are still many families in small towns and villages that keep a milk cow to supply fresh wholesome milk, cream and other dairy products for the family. Often a sentimental value attaches to an animal so useful and so valuable—a foster mother to the children. When the veterinarian is called to dehorn the family cow he should take this into consideration, and do the operation in a technical manner, causing no avoidable pain to the patient.

The usual anesthetic solution, procaine, is employed. As a means of control, a bull leader is applied. The site of injection is located by drawing an imaginary line through the middle of the orbit and the middle of the base of the horn. About midway between the orbit and the base of the horn the operator easily palpates the ridge which forms the lateral border of the frontal bone.

The needle is inserted at this point toward the temporal-mandibular articulation. The point of the needle should maintain close contact with the bone. A 20-gauge needle is preferable and it should have a shank 1½ inches long. In most cases the needle need be introduced no more than ¾ of an inch. 5cc of a 4% solution or 10cc of a 2% solution of procaine, to which has been added a few drops of 1-1000 adrenaline chloride solution, may be injected.

When ready for dehorning the usual method of restraint is to twist the animal's neck by grasping the left horn so as to bring the right horn into a dorsal position; the right ear is grasped to bring the left horn into a dorsal position. The purpose of rotating the head is to assure correct application of the dehorning shears to remove a

complete ring of skin around the base of the horn.

Before amputation an elastic rubber tourniquet is applied around the pole to control the hemorrhage. After the dehorning has been completed the elastic band should be left in position for at least six hours but never longer than 12 hours. When the horn is being amputated the animal seldom bawls or struggles and this makes a favorable impression on the owner. Possibly a saw is not materially more painful than the dehorning shears, but it looks more like butchery and that condemns it. It is unprofessional not to use an anesthetic and in dehorning family cows it is poor business as well.

Blue Rapids, Kans. Forrest O. Cox.

New Intravenous Therapy

Although great progress has been made in internal medicine, practitioners often find the orthodox methods of treating infectious diseases entirely inadequate. This is especially true in the generalized septicemias seen in small animals, of which canine distemper is an outstanding example. Our treatment of canine distemper with antisera, whether homologous or heterologous, along with symtomatic treatment, tonics, alternatives, etc., sometimes fails completely, if the case has advanced to a stage where the complications are severe, and where concentration of susceptible animals has "stepped up" the virulence of the infection.

When we analyze Nature's defenses in generalized septicemia we find three are foremost: (1) dilution of the infective agents, (2) antibody production, and (3) phagocytosis. In the last named defense we have a property that possibly might be given more consideration than it has received in the past.

Most gratifying results have been obtained by the intravenous injection of hydrochloric acid in cases of infectious diseases in man, particularly in those characterized by pus formation. This line of treatment has been advocated by Doctors Granville, Hanes, Burr Ferbuson, Norman Smith, W. M. Salter[1] and others as a means of increasing leucocytosis and promoting phagocytosis. Phagocytosis is a constant and essential factor in resistance, and any agent having the ability to stimulate these cells is of tremendous value. Morris[2] found that the number of leucocytes is much reduced in cases of canine distemper, even before clinical symptoms are manifest. Since the animal's hematopoietic system may be exhausted in a contest with the virus of distemper, it is easy to understand that when the secondary invasion by various pyogenic bacteria occurs, the natural defensive forces may be insufficient. If we are to control this, or any other infectious disease, it is logical to suppose that it must be done in two ways: namely, by neutralizing the infective agent and strengthening natural protective forces.

In hydrochloric acid we have a product that has given unequaled results in stimulating the body defense of phagocytosis and leucocytosis. A mass of experimental data has been collected in the field of human medicine in the treatment of tuberculosis, asthma, gonorrhea and many deep seated infections. Whether this action is direct or whether it is due to the alteration of the acid-base balance of the blood stream remains to be demonstrated.

Generally animals appear to tolerate exceptionally well the injection of hydrochloric acid, as was demonstrated in the veterinary clinic of the Kansas State College. In this demonstration a mature Holstein cow was treated as follows:

Date	Amount	Dilution	Results
Oct. 17	1500cc	1-2000	No change.
Oct. 20	1000cc	1-1000	Very slight increase in respiration.
Oct. 23	500cc	1- 750	Marked increase in respiration.
Oct. 26	2000cc	1-1000	No change.

From the above it will be seen that cattle have a high tolerance for intravenous injections of hydrochloric acid. Similar results have been obtained in the intravenous injection in man proving the tolerance for this acid, even though it would theoretically

[1]Presented to the Tri-State Medical Association of the Carolinas and Virginia, meeting at Raleigh, N. C., February 15th-17th, 1932.

[2]Nucleotide K-96 in the Treatment of Canine Distemper. Mark Loren Morris, D. V. M. North American Veterinarian, Vol. 14, No. 5.

cause hemolysis and a concomitant dangerous symptom complex. Extensive experience in human medicine, however, appears to refute this theoretical objection.

The fact that the injection of hydrochloric acid does stimulate the production of leucocytes and a phagocytic ability gives one a reasonable basis for therapeutic procedure in the treatment of infections.

A. H. Knost.

St. Louis, Mo.

Capillaria Infestation of Chickens

The vast yearly income of the poultry industry places the economic importance of poultry disease on a par with diseases of other farm animals. With poultry as with all other animals, the greater the numbers kept in a given area the greater the likelihood of disease.

At the Kansas State College experiment station a capillaria, previously not common in this section, has been observed of late quite frequently in chickens. In October, 1933, 103 chickens were autopsied and four were found infested. In November 48 were autopsied and four were infested; in December four of 64; in January 16 of 89, and two of 22 in February. Thus of 326 birds autopsied, 30 were infested with this parasite, or approximately 9%. The Capillaria in these cases, as yet, has not been identified positively as to species. It is commonly found in the ingluvies (crop), and occasionally in the esophagus and proventriculus. It is a small hair like Nematode, approximately 35 microns wide and 75 to 120mm long. It burrows into the mucosa and seems to sew itself into and throughout this structure. In order to see it distinctly the crop should be removed and held up to the light. In some cases it is necessary to strip off the outer muscular coat in order to detect the parasite. Then the parasite may be observed twisted and curled.

Chickens up to four months of age are apparently more susceptible; greater injury being suffered by them. This parasite moves about in the mucosa, leaving tunnels or tracts, some of which contain a large number of eggs. In one low power field, of a cross section of the crop of an infested bird, six such places were seen all filled with eggs. The eggs have an operculum on each end.

Most of the infested birds have shown some other major cause of disease, but whether or not the Capillaria were responsible for increasing the susceptiblity to the other disease remains undetermined. It is advisable, however, to be on the lookout for this parasite.

There is usually, but not always, an inflammation present at the point of entry. In some cases there is no indication of an infection. In heavy infestations the mucosa is greatly thickened, and a portion of it soon sloughs off, carrying with it many eggs, and in some instances the parasite itself. A fecal examination will often reveal the eggs, but this cannot be relied upon.

The control of Capillaria is the same as for other Nematodes, namely sanitation and dryness. The poultry yards should be well drained and, if possible, on a slight elevation. It takes quite a period for the eggs to develop after being expelled. Consequently by keeping the birds on dry ground the eggs are destroyed. Medicinal treatment would seem to be of no value since the parasite is entirely burrowed into the mucosa.

T. H. Nelson.

Holmen, Wis.

Collateral Reading for the Practitioner

Traditionally the professions of law, religion and medicine are learned professions. The veterinary profession is a part of the medical profession and therefore certain educational, cultural and ethical standards are expected of veterinarians that are not required of those in the trades whose skill is acquired from apprenticeship. To fail to meet these expectations is in some measure to fail to achieve the success one's professional skill makes possible. In other words, to fail to live up to one's opportunities.

Assuming one is the possessor of the

information and culture acquired from one's college courses in history, language and literature, something more is required of the practitioner aside from his professional study than is to be obtained from daily papers.

Such may be termed collateral reading; it is not directly professional, yet has some bearing upon one's professional work. It is not pursued for diversion or entertainment, although it is likely to prove highly entertaining as well as profitable. It broadens one's viewpoint. It establishes additional points of interest for one's varied clientele.

The following are a few of the recent books which are of interest in this connection. The list is being added to all the while.

ARTHUR KALLET and F. J. Schlink are authors of a recent book (1933), "100.000.000 Guinea Pigs." Both men have been affiliated with the Consumer's Research at Washington. Much study and worthwhile experiments have been carried on by these men. They show how widely advertised foods, drugs and cosmetics are being forced on the American public through unfair advertisements; and how although the sellers are keeping within the law, thousands of persons are being injured and perhaps many are dying each year from the use of these products. The authors speak of the American public as "unwitting test animals" in a gigantic experiment with certain foods, drugs and cosmetics. As will have been surmised, the book is not about real guinea pigs at all, but the title refers to the population of the United States which unwittingly serves as guinea pigs.

LIKE all other animals, the horse is a machine and has a mind which sets the machinery in motion. E. M. Cesaresco, in his book "Psychology and Training of the Horse" shows how people who manage horses usually attach little importance to the mind. The mind is important if the horse is to be trained properly. The psychology of the horse is treated thoroughly. The manner in which the horse learns and how he should be taught is portrayed very fairly by this Italian author. This book will be of much interest to those who are interested in the horse and his training.

ZOOLOGICAL gardens are being organized in many of the large cities of this country. Because of this trend, there are many veterinarians who are no doubt interested in the experiences of those who have been actively engaged in the work. Dr. W. Reid Blair has had twenty years of experience in zoological work, and is, at the present time, Curator of the New York Zoological Park. In his book, "In the Zoo," he tells of his personal contact with the untamed species. Not only is this book of interest to those who may be in direct contact with the work in a zoological garden, but it is interesting to learn of the habits, care, shelter requirements, and also various surgical and medical treatments that are required in a large zoological park. This book was published by Scribner's, New York, in 1929.

ON THE firing line of the medical profession, Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, stands out as a persistent and untiring gunman upon illegal medical practices. At present, he is warring on Brinkley, the "goat gland specialist," formerly of Milford, Kansas, but now of Mexico. Doctor Fishbein is the author of a book, "Modern Medical Follies," published by Boni & Liveright in 1925. The author deals with major malpractices and fakes, such as osteopathy, homeopathy, chiropathy, the electric reactions of Abrams, with essays on the anti-vivisectionists, health legislation, physical culture, birth control and rejuvenation. The author shows clearly how man, when in the depths of pain and physical suffering, becomes molding clay in the hands of unskilled and untrained men.

LOGAN CLENDENING, M.D., is the author of "The Human Body," one of the recent books, published by Alfred A. Knapf, New York (1928). The author has a sense of humor which is immediately recognized and which is an added attraction to the book. He gives us a very interesting and readable story of the body. Doctor Clendening has just published another book, "Behind the Doctor," which is equally interesting and delightful.

Marcus L. Bergsten.

Cleburne, Kans.

A Student's Criticism

PRACTITIONERS often state that the education a veterinary student acquires during college days, is wholly theoretical and that the practical training essential to successful practice must be obtained after graduation.

Such statements, I believe, are based upon something less than familiarity with present-day methods of instruction in our better veterinary colleges. It is granted that experience cannot be taught, but the instruction can be and is made practical. It is my purpose to explain something of what is being done in the clinic, and to offer a few suggestions for additions to the curriculum of veterinary medicine whereby a student may gain more knowledge that will help him in his practice.

The clinic here at Manhattan maintains an ambulatory service to farms in the vicinity. Senior students are taken in groups of five by one of the clinicians on calls. The students may be called upon to assist or administer treatment to the patient under the supervision of the veterinarian in charge. Questions are often asked of the student in regard to the patient and symptoms are emphasized that he may be more familiar with the condition if he should meet it again. This form of practice brings to the student the exact conditions a veterinarian has to contend with in practice. It shows him the proper method of restraint, methods of administering medicine and the technique used. It enables him to observe properly the attitude of the practitioner to the owner of the patient. Other courses that assist the student in acquiring practical information and skill in technique are surgical exercises performed on cadavers and still more on animals brought in for euthanasia.

A number of surgical operations, those most commonly done in the field, are performed first upon cadavers under the guidance of the instructor. Next, patients for euthanasia are operated upon before they are destroyed. This trains the student in the use of anesthesia, the procedure of the operation, the instruments used and the type of restraint. Training in the after care of the patient is acquired from handling clinic patients.

Another important type of training received is postmortem work. A group of students meet each afternoon for the purpose of conducting autopsies on all animals that are destroyed or have died from any cause during the day. The pathologist in charge directs the postmortem examination, explaining the pathological changes that have taken place and their significance. This course teaches the student the value of an autopsy, and fortifies him for the future treatment of comparable conditions. He is trained in every phase of the work, handling the knives and saws, interpreting the findings, laboratory examination of organs, writing up the protocol, etc.

Another duty to which each student is assigned, is that of pharmacist. His duties in this capacity consist of dispensing to all other clinical students the supplies needed, such as instruments, drugs, bandages, packs, etc.

Surely the foregoing cannot be considered wholly theoretical training and devoid of practical value. However, I would like to see the practical phases of our instruction augmented. There has been much talk during the last few years of adding another year to the curriculum of our veterinary colleges, and half of the colleges have adopted this plan. But why

must we stop here? Would not it be better to go another step and add to this a twelve or eighteen-month term of interneship, as is done in human medicine? Make it compulsory that the student must serve this interneship with an approved practitioner, or in the clinic as an interne. If this plan were carried out, it would afford the new graduate a chance to study the time-tried methods and short cuts of veterinary procedures and technique of the old schools. It would bring to the older practitioners an opportunity to observe the newer methods and procedures that are being conducted in the clinics of today.

If the student just out of school had an opportunity to associate with and study the methods of the older practitioners for a period of a year or more it would acquaint him, among other things, with details of bookkeeping and the technique of collections and thus perhaps eliminate some of the financial pitfalls that beset the recent graduate. He would also learn the proper charge for various services and thereby establish a more fixed or uniform price range between the old and the new veterinarian.

If each student could have the opportunity to serve a summer vacation as an assistant to a B. A. I. meat inspector, he would be able not only to extend his knowledge of pathology, but would be able to take up this important phase of veterinary service later if the opportunity came with more credit to himself and to the veterinary profession, than have some of those who have preceded us in this field.

I am sure that veterinary students and our veterinary schools would welcome such cooperation of practitioners and of the Federal meat inspection service in supplementing the training now given veterinary students to the end that they be made more capable of carrying on the best traditions of the profession.

H. J. Osterholtz.

Manhattan, Kansas

Recurrent Colic Due to Neoplasm

On March 22, 1934, a client came in for some colic medicine for his horse, named Roudy, and by having the name, one is expected to know exactly what to dispense. A bottle of colic medicine and laxative mixed. The horse is a Bay Percheron, 17 years old.

On March 25, I was called and found a very depleted animal, much to my surprise, as I knew the horse and he always had been in very good condition. On examination I found the temperature 101.1° F., pulse 68, respiration 32, appetite poor, the animal very listless, shifting position. I administered sodium cacodylate 60 grains, and a capsule of muco septo.

On March 27, the owner reported the horse in fine condition, except for some ventral surface swellings, which cleared up in a few days, and the animal appeared fine.

On April 20, I was called again. Temperature 103.4° F., pulse 84, respiration 39, membranes highly injected, appetite none, would drink a little water and stand and gaze at the wall, shifting position frequently. Then he would lie down and rest. The head was held low. Aside from being very thin, the animal appeared normal. Theatment: The same as before, but added a stomachic.

On April 23, the temperature was 100.1° F., pulse 42, respiration 21, head up, appetite good, would offer to kick while being examined. Treatment: Another 60-grain dose of the cacodylate and instructions to the owner to continue as before, and to let me know in case of any change for the worse.

On April 24, the owner gave the medicine at noon and looked the horse over at 1:30 p. m., as he was going to the funeral of a neighbor. When he returned at 3:30 p. m. the horse was dead. The owner had him hauled out and I held an autopsy the next day. The postmortem examination revealed a large tumor, 63 pounds, of a fibroid nature admixed with large blood passages.

The rupture of this blood vessel, if one may call it such, seemed to be the cause of death. There was an imbedded testicle which lay in the left flank which appeared normal except it was flat. Where the other had been removed, there was an accumulation of about twelve ounces of a reddish colored pus which led into the inguinal canal by infected tissue, but did not seem to connect with the tumor.

I thought this might interest some as much as it did me. This is about the only time we have a good chance to see on the inside of these cases. We can learn much and usually can satisfy our clients, by post-mortem examination of the cases we lose.

J. H. Wilson.

Ewen, Michigan.

The Stomach Tube in Veterinary Medicine

THE use of the stomach tube in veterinary medicine is essentially an art of American veterinarians.[1] There are various types and sizes of stomach tubes available from any veterinary supply company. Perhaps the most common type is the pure gum red rubber tube with smooth outer coating, flexible and easy to insert. They are for the most part ten feet in length and are supplied in three popular diameters, large size with ½-inch bore, regular size with ⅜-inch bore, and the small size with $\frac{5}{16}$-inch bore.

The technique of passing the stomach tube is relatively simple, but it requires practice to become adept at it. In the horse the stomach tube is passed through the nostril. The tube is lubricated to facilitate its passage either with mineral oil, vaseline, elm bark, soap and water, or if nothing else is available, water alone may be used.

When attempting to pass the tube through the right nostril the operator stands in front and to the left of the patient and with the right hand directs the tube through the ventral portion of the nostril. Due to the anatomical structure of the turbinate bones this point is of utmost importance as failure to observe this portion of the technique is almost sure to result in nasal hemorrhage. After one has the tube past the turbinate bones, the more rapidly, within reasonable limits of course, the tube is passed the less resistance one will meet on the part of the patient. Further care must be exercised not to push the tube into the trachea. This can easily be determined by the resistance to the tube in passing, for if it is in the trachea there will be little or no resistance. Another simple method is to blow through the tube. If it is in the trachea blowing through the tube will usually cause the patient to cough violently. Further, one may see evidence of the tube passing down the esophagus from the outside, or may feel it in the esophagus from the outside. If difficulty is encountered in passing the tube through one nostril, try the other, and usually no difficulty will be experienced.

In the bovine species the tube may be passed through the nostril, but usually the most practical method consists in the use of a hollow metal tube 1½ inches in diameter and about 18 inches long. The metal tube is placed in the mouth back over the base of the tongue and the stomach tube inserted through the metal tube into the esophagus. Most stomach tubes are marked to indicate when they are in the stomach or rumen, as the case may be, of the patient of average size.

To remove the tube withdraw it quickly except for the last two feet. This is especially important in the horse, as, if jerked away, the end of the tube may slap around and injure the turbinate bones, causing epistaxis, which may prove difficult to explain to the owner. If hemorrhage does occur, an injection of two ounces of hydrogen peroxide into the nasal cavity with a dose syringe will usually control it.

Indications for the use of the stomach tube:

1. Acute bloat.
2. Overloading of the stomach.

[1]The stomach tube was invented in 1767 by Alex. Monroe of Edinburgh, Scotland. Its use was common in Great Britain for fifty years, after which it fell into complete disuse to be revived by Dr. D. O. Knisely of Topeka, Kansas, sixty-five years later.

3. For a gastric lavage.

4. Diagnosing a twist in the stomach.

5. Diagnosis of choke; cervical and thoracic.

6. Administration of drugs.

7. Treatment of choke.

8. As a means of administering a high enema.

9. For uterine douching in cases of retained placenta, metritis, etc.

10. May be used as a tourniquet on large animals in cases of amputations.

After use the stomach tube should be washed and dried well before being put away. Leading practitioners everywhere use the stomach tube daily. It is far superior in every respect to the conventional drenching bottle as it eliminates all doubt as to where the medicine is going. Its use also tends to minimize doctoring by the owner, as few laymen will attempt to pass a stomach tube.

J. M. Hurd.

Pawnee City, Nebr.

* * * *

Abstracts

By F. VOLKMAR
Columbus, Ohio

Blood Sugar in Horses

Blood sugar in colts varies from 98 to 145mg. per 100 cc of blood with a medium value of 119 to 127mg.[59] The rest-N content of the serum is 37.6mg. per 100cc during the first period after birth, later the value sinks to 22.5mg. In weaned colts, yearlings, and two-year-old colts, the values are 29.4, 28.6 and 29.6mg. per cent respectively. The alkali reserve in weaning colts varies between 49.0 and 70.9, with an average of 59.8, in weaned colts between 40.7 and 74.2 or an average of 60.2, in yearlings 48.8-65.6, average 59.3, in two-year-olds 47.1-65.8, or an average of 58.4mg per cent. The sexes do not exhibit differences.

[59] Luy, P., and Köser, A., 1934. Ueber den Gehalt des Blutes Trakehner Fohlen verschiedener Altersstufen an Blutzucker, Rest-Stickstoff und Alkalireserve. (Blood-sugar, rest-nitrogen, and alkali-reserve of the blood of horses.) *Arch. Tierheilk.* 67 (4) :347-357.

Immunity of Young Pigs to Cholera

The resistance of young pigs [58] to hog-cholera depends upon the degree of immunity conferred by their mothers, the amount of protective matter taken in with the milk, and upon the conditions of management. This resistance has been found to vary considerably in experimental cases as well as in actual practice. The vaccination of nursing pigs of immune sows with virus alone is, therefore, unreliable and impractical.

* * * *

Successful Treatment of Purpura Hemorrhagica

Reasoning that the petechial fever is of anaphylactic origin, a combination of calcium and iodine was used for treatment with the result that recovery was achieved in 26 out of 27 cases.[60] When an animal with morbus maculosus was admitted to the hospital, 100 to 150cc of a 10% solution of calcium chlorate was given intravenously. This was followed up daily with a dose of 20gm calcium chlorate, and a tablespoon of Lugol's solution in the drinking water. The edematous condition present was treated with an application of oil of turpentine, 1 part, and camphorated spirit, 2 parts. Improvement was noticed as early as the second or third day.

* * * *

Summer Sores in Cattle

Among the cattle of Bulgaria[61] a dermatitis of the nature of granulating sores, closely resembling the so-called summer mange in horses recurs every summer. The cause was found to be a nematode larva, 4 to 6mm long, and 75 to 100mm thick. These larvae are transmitted by *Stomoxys calcitrans* and *Musca domestica.* Speedy recovery is obtained by preventing the flies from gaining access to the sores.

[58] Manninger, R., and Csontos, I., 1934. Ueber die Empfänglichkeit von Ferkeln immuner Mütter für das Schweinepestvirus. (Susceptibility of pigs from immune sows to hog cholera.) *Arch Tierheilk.* 67 (3) 239-249.

[60] Laas, A., 1934. Beitrag zur Behandlung des Morbus maculosus equorum mit Calcium und. Jod. (Calcium and Iodine treatment of Purpura hemorrhagica.) *Arch. Tierheilk.* 67 (4) : 335-339.

[61] Iwanoff, X., 1934. Ueber Sommerwunden beim Rinde. (Summer sores in cattle.) *Arch. Tierheilk.* 67 (3) 261-270.

The economic importance of this disease lies in the depreciation of the value of the hides.

* * * *

Leucemia in a Dog

A shepherd dog, five years old, was admitted to the hospital[34] with the history that he had been run over by an automobile two weeks previously, which accident did not seem to have caused him much inconvenience then. However, the appetite waned, he began to cough, and emaciation set in rapidly. When admitted to the hospital, the axillary and the popliteal lymph glands were palpable, and of the size of a walnut. Blood examination revealed the following values: Number of erythrocytes 4,860,000; they showed signs of anisocytosis, poikilocytosis, and polychromasy. The leucocytes numbered 21,000, consisting of 62% neutrophiles, 30% lymphocytes, 7% monocytes, and 1% eosinophiles. The X-ray picture gave an enlarged shade of the peribronchial lymphnodes. Since the tuberculin reaction was doubtful, antileucemic treatment was started.

On the 18th day following admission, hepatic dullness was found, covering an area about the width of three fingers in diameter. Palpation of the abdomen revealed enlargement of the spleen; the lymphnodes could be recognized as cordlike forms. The urine exhibited bile pigment and 0.25% albumin. The blood picture was as follows: Erythrocytes 4,260,000, leucocytes 23,000, neutrophiles 72%, lymphocytes 26%, monocytes 2%.

On the 22nd day, the body lymphnodes were found further increased. On the 30th day, an increase of the abdominal lymphnodes and of the spleen was observed. On the 37th day, the left popliteal lymphnode was excised and examined histologically. The changes found corresponded to a lymphatic hyperplasia. Meanwhile, the apathy of the dog becomes aggravated; frequently, the stool became diarrheic. No response to the antileucemic treatment took place. Finally, on the 42nd day after starting treatment (the 56th day after the accident) the case was considered hopeless, and the dog was ordered to be destroyed.

Autopsy revealed emaciation; the maxillary, cervical, axillary, and inguinal lymphnodes were swollen, equalling in size a chestnut. The spleen was considerably swollen and deformed, weighing over two pounds; it exhibited numerous scars. The liver was enlarged. The histological examination of the lymphnodes revealed the presence of lymphnode elements in such numbers as to obscure the finer structure of the adenoid tissue. The entire parenchyma consisted of a solid cellular structure without follicular differentiation. Oxydase reaction revealed the presence of considerable myeloid elements in the lymphnode tissue. The lung tissue exhibited lymphocytary cell aggregation.

On the basis of the histological findings and in consideration of the blood picture, the author diagnosed the disease as a subleucemic lymphatic leucemia.

The question arises, what rôle did the trauma play in this case? Did it cause the leucemia, or did it merely aggravate a leucemic process already present, though latent? The entire course of the disease points toward the spleen injury as the exciting cause of the leucemia. On the basis of experience and of experiments it seems obvious that trauma alone is not sufficient to cause leucemia. It is, therefore, to be assumed that a special disposition toward leucemia must be present, whenever leucemia is the result of trauma. There is a certain analogy between leucemia and neoplasms in so far as it is known that trauma will often cause tumors, but only in individuals that possess a disposition towards tumors. It seems therefore evident that leucemic and tumoral predisposition are attributable to the same biological principle. While the exciting trauma acts merely as a stimulus which induces the process of regeneration, the leucemic condition will develop from a general tumor predisposition.

[34] Jarmai, K. 1933. Trauma und Leukämie, zugleich ein Beitrag zur Pathologie der Milzschädigung bei den Haustieren. (Leucemia caused by trauma to the spleen.) *Beiträge z. path. Anat. u. z. allgemeinen Pathol.* 92(1):119-126.

Leucemia in Dogs

Of the three cases described as lymphadenoses,[35] the blood picture in one patient was decidedly lymphatic-leucemic. The composition of the white blood picture indicated a considerable absolute and relative increase of the lymphocytes, among which appeared numerous lymphoblasts and cells with peculiar nuclear findings, such as indentation, division, and mitosis. These two findings, together with the variability of the lymphocytes, doubtlessly justify the designation: "mixed-cell lymphatic-leucemic blood picture." In addition, there was an absolute increase of this cell-type, especially of the neutrophiles, in spite of the low relative numbers for granulocytes; besides there are neutrophile metamyelocytes present, and those containing a rod-shaped nucleus. This finding indicates an irritation of the myeloid system; the involvment of the erythrocytary system is indicated by the decrease of the hemoglobin content and of the red blood cells, as well as by the appearance of erythroblasts, of Jolly bodies, of polychromasy, and of reticulocytes.

The two other patients exhibited a similar, but quantitatively less pronounced blood picture. The increase of leucocytes was relatively low (31,800; 43,000). The lymphocytes in one of the dogs amounted to only 52.8%. The small number of leucocytes before death was probably a sequel to the Roentgen-ray treatment, as were likewise the changes upon the polymorphonuclear neutrophile leucocytes. In one patient the blood picture consisted of small-celled lymphocytes, a characteristic of the human leucemia.

In all three cases the clinical picture corresponded to the types of leucemia. The swelling of the lymphnodes was extensive and generalized. The spleen was greatly enlarged. The etiological moment was unknown. The owner of the dog merely recognized either a general apathetic behavior of the animal, or the swellings in the region of the lymphnodes which caused the suspicion of impaired health. The duration of the disease until the fatal termination was approximately three to four weeks.

The histological examination revealed that the proliferation was caused mainly by the dense lymphatic hyperplasia. This interpretation is supported by the negative oxydase reaction. The infiltrations of the liver are quite sharply demarcated, more or less rounded; the lobular tissue has been crowded out.

In various organs, myeloic cell foci are found in the lymphatic cell proliferations which are also characterized by the occurrence of bone marrow giant cells (lymphnodes, spleen). Though these findings appear to be peculiar, they correspond with the intravital blood picture which was characterized by an absolute increase of the neutrophiles.

Of the ten cases of leucemia, exhibiting neutrophile leucocytes in the blood picture, the group was characterized by the lack, or at the most, by the weak increase of the absolute number of leucocytes, that is by an aleucemia, or by subleucemic values. The highest number of leucocytes in these cases was 31,350. The composition of the blood picture revealed an increase of neutrophiles and the presence of immature neutrophile forms (myeloblasts, myelocytes, metamyelocytes). The eosinophiles were either absent or extremely low in numbers; basophiles were likewise absent, while the lymphocytes were decreased. The high absolute as well as the low absolute number of lymphocytes may be encountered either with low or with high leucocyte values.

The monocytes do not show anything peculiar; anemic changes are usually present in various degrees. The blood picture corresponded therefore to the simple neutrophile leucocytosis, and, consequently, differed essentially from that of human myeloic anemia, which latter is characterized by a profusion of all kinds of myelocytes. The clinical picture resembled in all respects that of a typical lymphatic leucemia.

With the exception of the blood picture, the anatomical and histological findings agree roughly with those of the leucemic lymphadenoses.

[35] Wirth, D. und Baumann, R. 1933. Die Leukämien des Hundes. (Leucemias in dogs.) *Folia Haematologica.* 50 (⅔) :242-259.

On the basis of the cases under consideration, the authors are unable to decide whether true myeloic leucemia (corresponding to that in man) occurs in dogs. He proposes to call these cases at present "lymphatic leucemia with a leucocytary blood picture." These leucemias will respond to Roentgen ray treatment, the same as true lymphatic leucemias. This observation, and the agreement of the clinical picture tends to stress the lymphatic character of these leucemias.

* * * *

Spermatozoa Collection

In the ideal method of procuring sperma,[40] the entire semen should be collected without loss and without soiling. The viability of the spermatozoa should not become injured as a result of faulty technic of collecting. The number of sperm-cells per unit should not suffer reduction. The health of the sperm-producer must be maintained.

The following methods were tested:

1. The ejaculation by mechanical friction. This is practicable in dogs only. It is in all respects a clean and practical method.
2. The placing of an urethra-fistula at the root of the penis. This is injurious and impractical.
3. The vaginal method; it is most successful in the horse.
4. The condom method; this is considered more or less impractical.
5. The sponge method; the loss of sperma is enormous.
6. The collector method (an improved Roemmele method); it is practical in the mare and in the cow.
7. The artificial vagina (either with or without phantom). This method possesses great advantages: The entire ejaculated semen may be intercepted. With any degree of care, it easily remains clean and undiluted. The activity of the spermatozoa remains unimpaired. The sexual partners do not come in contact with each other. At present, it affords the best means of examining the semen, physiologically and pathologically, as it is produced.

The average amount of semen in various domestic animals is as follows: Stallion 51.5cc, bull 4.7cc, sheep 1.58cc, boar 40cc. The average number of spermatozoa in one cubic centimeter is as follows: Stallion 70,000, bull 800,000, sheep 2,800,000.

With regard to the behavior of spermatozoa outside the body, it has been found that temperatures of 40° C. (104° F.) and above are detrimental; likewise low temperatures and sudden changes in temperature. The optimum temperature for storage of spermatozoa is 7° to 13° C. (44.6° to 55.4° F.). Direct sunlight is harmful.

The following materials have a powerful toxic action upon spermatozoa: All organic and inorganic acids, bases and salts, all disinfectants, glycerol and faucet water, bacterial contamination.

The use of disinfectants, metal syringes, metal catheters and vessels must be avoided by all means. The least harmful cleaning solutions are: pure alcohol and physiologic solutions.

Special attention should be called to the dilution of the semen. Naturally dense sperma, such as that of bulls, produces fewer impregnations, when injected undiluted, than when injected diluted to a certain degree. The common isotonic fluids are unsuitable; instead a phosphate-glucose-dilutor has given the best results. The optimal dilution depends on the density of the sperma.

Methods of conservation have not been elaborated so far. With the exception of bull sperma which is still viable after six hours of storage, sperma should not be older than ½ hour for good results. Experimentally it has been found that diluted sheep sperma can be rendered effectively anabiotical in a short time, and when revived after 98 hour's storage, 60% of the spermatozoa would become active again.

The author uses the following values in scoring the semen:

00 : no spermatozoa present.
0 : presence of dead spermatozoa only.
1 : predominance of immobile spermatozoa.

[40] Götze, R. 1933. Ueber die neuen Russischen Methoden der künstlichen Besamung bei Haustieren. (Methods of artificial insemination of domestic animals in Russia.) *Deut. Tierärztl. Wchnschr.* 41(51): 801-807; (52): 820-824.

2 : considerable number of immobile spermatozoa.
3 : majority of spermatozoa are mobile.
4 : predominance of actively motile spermatozoa.
5 : all spermatozoa very motile.

Density is differentiated according to the following scheme:

ddd : dense sperma.
dd : moderately dense sperma.
d : thin sperma.

Thus, a sperma with the value 3dd is a sperma of medium density in which most of the spermatozoa are motile, but occasionally a few immotile ones are encountered. Bull sperma, for instance, to be fit should have a score of 3-5ddd, or at least 3-5dd. Experiments on sheep have demonstrated that artificial insemination will produce more pregnancies than natural breeding. The optimal amount of semen constitutes 5 to 10cc for mare, 1cc for the cow, and 0.1cc for the ewe. Greater amounts cause irritation of the uterus and hinder fertilization.

The artificial collection of semen is of value in the testing of male animals for fitness for breeding; in the investigation of the relationship between sperma production and feeding; in the greater service obtained from proven sires; as an aid in combating the spread of genital diseases, and as an aid in overcoming certain forms of sterility.

Atropine in Chloroform Anesthesia

During the stimulant stage of chloroform narcosis,[41] a pronounced impairment or complete failure of cardiac function may occur as the result of an excessive activity of the cardio-inhibitory nerve center. Since atropine depresses the cardio-inhibitory nerve endings in the heart, the administration of the latter drug, 15 minutes previous to chloroform anesthesia, has been recommended, in order to prevent inhalation accidents. A quarter or a half-grain of atropine sulphate eliminates all danger of sudden arrest of heart action, due to excessive central nervous inhibition, in a mature horse or ox.

[41] Amadon, R. S. 1934. Atropine as a safety aid in chloroform anesthesia. *Veterinary Extension Quarterly* No. 53 (Univ. of Penn.)

Tooth Injuries in Foxes

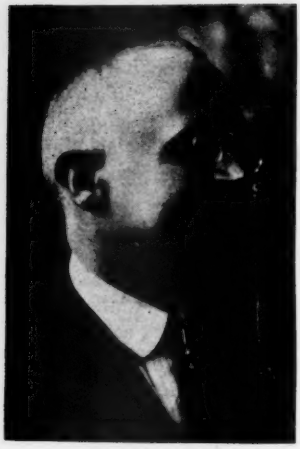
The jaws of 21 blue and silver foxes, numbering 869 teeth, yielded the following observations:[42] None possessed either supernumerary teeth, or inequal double formations. In one case a third molar, including its vestige, was lacking. Once, all the lower incisors were found loosened. There were two types of film covering the teeth; a thin brown covering of the molars, also seen orally, and the bright tartar, principally on the incisors; the latter is never pathogen, and is never seen orally. The teeth are often discolored, either by hemolyzed blood-pigment, or from a variation in the blood-pigment, or from putrid pulp matter. Defects of the enamel are numerous, but usually harmless; they result either from champing or from gnawing on iron bars. The latter may also cause fractures, involving always the process of the pulp. Clipping of the teeth should be discouraged, because of the danger from sepsis. Caries may be suspected in 0.46% of all cases on the basis of symptoms.

Albumen-Globulin Ratio in Equine and Bovine Sera

The serum albumen[45] content and the albumin globulin ratio vary during immunisation processes and during diseases which develop with a fever and with breaking down of tissue. These two factors, although not specific for particular diseases, react similarly in various diseases. Usually they increase in accordance with the activity and extent of the disease, and are of value in prognosis. The total albumin content of normal blood-serum was found to be 7.23% in the horse, 7.28% in the ox, and 6.04% in the calf. The albumin globulin ratio varied in the horse between 77 and 50% albumin and 23 and 42% globulin; in cattle betwen 69 and 48% albumin, and 31 and 52% globulin; in the calf between 90 and 61% albumin, and 10 and 31% globulin.

[42] Kraus, F. 1932. Beitrag zu den zahnschädigungen der Silberfüchse. (Tooth-injuries in silver foxes.) *Prager Arch. f. Tiermed. u vergl Path.* 12(4) :95-100.

[45] Schwob, L. 1932. Ueber den Gesamteiweissgehalt und das Albumin-Globulinverhältnis in normalen und pathologischen Pferde-, Rinder-, und Kälberseren. (Albumen-globulin ratio and the total protein content of normal and pathological equine and bovine sera.) Thesis. University of Zürich.



Professor Ascoli

PROFESSOR DOCTOR ALBERTO ASCOLI

Alberto Ascoli was born in Trieste, at the northern tip of the Adriatic, in 1877. After graduation from the Medical Department, University of Vienna, he went to Pavia, where he also obtained an M.D. degree. In 1907 he obtained the "private dozent" degree in physiological chemistry in the Royal University of Pavia, and in 1910 received a degree in veterinary hygiene in the Superior School of Veterinary Medicine of Milan. In 1915, he became Director of the Superior Institute of Veterinary Medicine in Modena, where he remained until 1924, when he went to the Royal School of Veterinary Medicine in Milan as head of the Department of Pathology and Pathological Anatomy. For 17 years, Professor Ascoli was associated with the Institute of Serum Therapy of Milan, at first in charge of the production of anthrax vaccine, later as associate director and then as vice director, of the institute. In 1924, he founded the Instituto Vaccinogeno Antitubercolare, of which he has since been the head. For many years he has specialized in the science of immunology and ranks as one of the most prominent of Italian immunologists. Since 1910 he has been director of the Review of Bio-Chemistry Experimental Therapy. His scientific publications are very numerous.

International Veterinary Congresses

The Eighth International Veterinary Congress met in Budapest, Hungary, in September, 1905; attendance 1,400. V. A. Moore, Ithaca; Wm. Henry Kelly, Albany; W. J. Lintz, Philadelphia; Moses Jacob, Knoxville (Tenn.); H. E. Titus, LaFayette (Ind.); Leonard Pearson, Philadelphia, and A. Eichhorn, Washington, attended from this country.

Among the resolutions adopted were:

1. The struggle against tuberculosis is an urgent necessity, not only on account of the economic losses resulting from it, but also on account of the danger of transmission to man.

4. The preparation and distribution of tuberculin ought to take place under the control of the state.

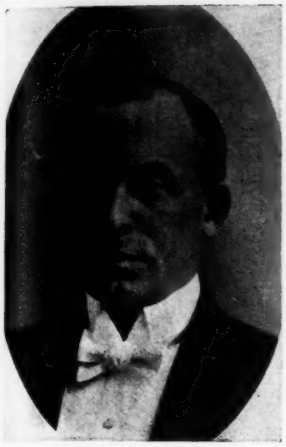
14. The preparation of mallein shall be allowed only to scientific institutions in the state or to places authorized and controlled by the state.

In relation to rabies, the most severe regulations were recommended; obligatory declaration, long quarantine, registration and

PROFESSOR DOCTOR HERMAN MIESSNER

Herman Miessner was born in 1870 and was graduated in 1894 from the Veterinary College in Berlin, and in 1900 received the degree of Doctor of Philosophy from the University of Greifswald. In the same year he was appointed assistant veterinarian in the Berlin meat inspection service. From 1900 to 1905 he was assistant to Professor Schuetz, head of the pathological institute of the Veterinary High School, Berlin. In 1912 he became Professor of Hygiene and director of the Hygienic Institute of the Veterinary College in Hanover. In 1924 he received the degree of Doctor of Veterinary Medicine, and in 1928 the honorary M.D. degree from the University of Göttengen. In 1930 he was elected a member of the Royal Society of Medicine of London. Professor Miessner is the author of many scientific articles, published in the veterinary and medical press of Germany and of Epizootics and Their Control During War, a translation of which was published in the United States. He will present a paper at the 12th International Veterinary Congress in New York, in August, on the "Diseases of Young Animals."

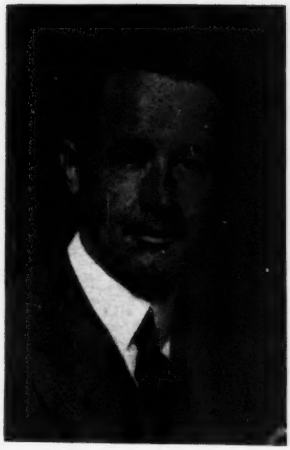
Professor Miessner



Professor Magnusson

PROFESSOR HILDING GUSTAV MAGNUSSON

Hilding Gustav Magnusson was born in Jönköping, Sweden, in 1886, and graduated from the Veterinary Institute in Stockholm in 1909. He was employed in the State Veterinary Biological Institute from 1911 to 1914, and in 1915 was appointed Director of the Cattle Market and Bacteriological Laboratory of the Malmöhus Provincial Agricultural Society, Malmö, Sweden. He has contributed numerous articles to the veterinary press on the diseases of animals, including monographs on tumors, diseases of the foal, sterility in free martins, actinomycosis, foot-and-mouth disease and contagious abortion.



Capt. T. M. Doyle
Research Officer, Veterinary Laboratory of the Ministry of Agriculture and Fisheries, Weybridge, England.

taxes on all dogs, muzzle wearing, death for street dogs and those unclaimed.

The Ninth International Veterinary Congress met at The Hague, Netherlands, September, 1909, with 1,448 members in attendance. The delegation from the United States comprised W. L. Williams, Ithaca; L. Van Es, Fargo (N. D.); Langdon Frothingham, Harvard University; Austin Peters, Boston; L. M. Steckel, Cincinnati.

Dr. Edward A. Watson, Hull, Quebec; Lady Theiler; Prof. Charles Porcher, Lyons, France, and Sir Arnold Theiler, Luzerne, Switzerland. This photograph was taken in Chicago in 1923. Prof. Porcher died recently. He was Docteur Es Sciences Physiques, Correspondant de l'Institut, Inspector Général des Ecoles Vétérinaires, Membre du Conseil Supérieur d'Hygiène de France, Correspondant de l'Academie Royale de Médecine de Belgique, Officier de la Légion d'Honneur, Commandeur du Mérite Agricole, Officier d'Académie, Commandeur de l'Etoile de Roumanie, Commandeur du Mérite Agricole de Roumanie, Officier du Sauveur de Gréce, Chevalier de l'Ordre de Léopold (Belgique) and Décoré Officier de lere Classe du Gouvernement Belge. Sir Arnold Theiler was chairman of one of the general sessions of the 11th International Veterinary Congress and pleased everyone by putting all motions and making all announcements in all three official languages, English, German and French, which he speaks with equal facility. It is noteworthy that at the 8th International Veterinary Congress (1905), Doctor Theiler presented three papers, all on tropical diseases.

Dog Publications

Most veterinarians read dog books occasionally and one or more dog publications regularly; but whether personally interested in the subject or not, every veterinarian is called upon at times for information concerning dogs, and a list of the newer or more important books on this subject and a list of the periodicals devoted to the various breeds or other matters pertaining to dogs, may prove useful. Such a list follows:

The Modern Pointer, by A. F. Hochwalt, $2.00.
The Modern Airedale, by W. J. Philips, $1.60.
The Modern Airedale, by James Saunders, $1.25.
Beagles and Beagling, by A. F. Hochwalt, $1.10.
The Bloodhound and Its Use in Tracing Criminals, by E. Brough, 50 cents.
The Bullterrier, by William Haynes, $1.10.
The Bullterrier, by T. W. Hogarth, $2.25.
Bullterrier Handbook, by D. H. Robbs, $2.00.
Cairn Terrier, by G. H. Ross, $2.00.
The Popular Cairn Terrier, by Beynon, $2.00.
The Collie, by O. P. Bennett, M.D., $2.60.
The Collie in America, by Edwin L. Pickhardt, $1.10.
Care of Collie, by F. W. Avery, $1.00.
The Coonhound, by Robert Legare, $1.10.
The Foxhound, by R. D. Williams, $1.10.
The Foxterrier (Smooths and Wires), by Hugh Dalziell and J. Maxtee, $1.10.
A Monograph on the Foxterrier, by Marples, $2.00.
The Foxterriers (Smooths and Wires), by Wm. Haynes, $1.10.
Foxterrier Breeding (Smooths), by Castle, $2.00.
The Perfect Foxterrier (Smooth and Wires), by Astley, $1.00.
The Popular Foxterrier (Smooths and Wires), by Skinner, $2.00.
Foxterrier Stud Book (Wirehaired), $2.00.
The Wirehaired Foxterrier, by I. C. Ackerman, $2.65.
French Bulldog (American Club), $5.25.
Breeding and Training Greyhounds, by Dalziell, $1.10.
Greyhound Breeding (Racing and Training), by A. C. Smith, $1.10.
The Brussels Griffon, by Mabel Rhodes, $2.00.
American Hunting Dog, by W. H. Miller, $2.65.
Irish Terrier, by F. W. Jowett, $2.00.
The Irish Wolfhound (Club Book), $2.00.
The Kerry Blue Terrier, by Edgerton Clarke, $2.25.
The Show Pekingese, by Mrs. Loftus Allen, $2.00.
The Popular Pomeranian, by Mrs. E. Parker, $2.25.
The Show Pomeranian, by Ives and Thompson, $2.20.
The Pug Dog, by W. S. Goodger, $2.25.
The Popular Retrievers, by L. C. Sprake, $2.25.
Retrievers and Retrieving, by W. G. Elev $2.25.
The Saluki (Club Book), 50 cents.
The Schipperke (Club Book), 50 cents.
The Schnauzers (All Varieties), $1.25.
The Scottish Terrier, by W. L. McCandish, $2.00.
The Scottish Terrier, by D. Gabiel, $1.25.
The Scottish Terrier, by Fayette C. Ewing, $2.50.
The Sealyham, by Jocelyn Lucas, $1.50.
The Sealyham, by Theo. Marples, $2.10.
All Setters and Their Training, by Freeman Lloyd, $2.50.
Setters (Irish, English and Gordon), by M. I. Bepler, $2.25.
The Shepherd Dog, by Enno Meyer, $1.10.
The Popular Shepherd (Alsatian), by Schwabacher, $2.25.
Shepherd Dog in Word and Picture, by Capt. Von Stephanitz, $8.00.
The Police Dog (Shepherd), by David Brockwell, $2.65.
Shetland Sheepdogs (and Collies), by W. Baskerville, $2.00.
The Popular Cocker Spaniel, by H. S. Lloyd, $2.25.
Sporting Spaniels, by John Stewart, 75 cents.
Sporting Spaniels, by Phillips and Cane, $2.50.
Spaniels, Their Breaking for Field and Sports Trial, by H. W. Carlton, $2.20.
The Sporting Dogs, by J. A. Graham, $2.10.
Terriers, Hunt and Working, by J. Lucas, $5.00.
The Yorkshire Terrier, by S. Jessop, $2.00.
Surgical Diseases of the Dog and Cat, by Hobday, $4.75.
How to Train Your Bird Dog, by J. Horace Lytle, $2.00.
Training the Bird Dog, by C. B. Whitford, $2.50.
Training the Rabbit Hound, by A. C. Smith, $1.10.
Dogs of All Nations, by Mason, $1.50.
German Dogs in Word and Picture, by E. Von Otto Bersheim, $2.00.
Kennel Secrets, by Ashmont, $5.00.
Preparation of Dogs for Exhibition, by J. W. Marples, $1.50.
Profits in Puppies, by Josephine Rine, $1.00.
Your Puppy, by Josephine Rine, 85 cents.
Standards of All Breeds, Dog World, June, 1933, 50 cents.
Training Dogs, by Will Judy, $1.50.
Topographical Anatomy of the Dog, by O. Charnock Bradley, $7.00.
Dog's Medical Dictionary, by A. J. Sewell, $3.00.
Diseases of the Dog and Their Treatment, by Alexander Glass, $6.00.
First Aid to Animals, by John Lynn Leonard, $2.60.
Surgery of the Dog, by Cecil French, $3.20.
Worms and Intestinal Parasites, by Fred O'Flaherty, 30 cents.

The Amateur Bird Dog Trainer, by E. F. Haberlein, $2.00.
Dog Encyclopedia, by Will Judy, $3.00.
The Ideal Boston Terrier, by Josephine Rine, $2.00.
The Complete Bulldog, by W. E. Simmonds, $2.00.
The Dachshund, by Grace Greenburg, 50 cents.
The Doberman Pinscher, by Wm. Sidney Schmidt, $2.00.
The Great Dane, by D. E. Hale, $2.50.
The Russian Wolfhound, by N. L. Martin, $2.50.
The Saint Bernard, by G. Zulliger, $1.00.
Terrier Trimming Chart, Will Judy, $1.00.
Principles of Dog Breeding, by Will Judy, $2.00.
Kennel Building and Plans, by Will Judy, $1.00.
Training the Police Dog, by Kollet, $1.00.
The Chow Chow, by Will Judy, $2.00.
Boston Terrier, by Vincent G. Perry, $2.00.
The Modern Setter, by A. F. Hochwalt, $4.00.
The Scottish Terrier, by Dr. Wm. A. Bruette, $2.50.
The Wirehaired Foxterrier, by Irving C. Ackerman, $2.50.
The Boston Terrier, by E. J. Rousuck, $2.50.
Dr. Little's Dog Book, by Dr. Geo. Watson Little, $4.00.
Feeding Your Dog, by Josephine Rine, $2.00.
Modern Dogs, by Will Burette, $2.00.
Pure Bred Dogs (American Kennel Club), $5.00.
Diseases of the Dog, by J. Maxtee, $1.10.
The Dogs of Today, by Harding Cox, $2.00.
Practical Dog Breeding, by William Haynes, $1.00.
The Spaniel and Its Training, by F. H. Mercer, 50 cents.
Terrier Dogs, by Ed. James, $1.00.
Training the Dog, by Robert S. Lemon, $1.50.
Diet for Dogs, Geo. Watson Little, $2.00.

The aforementioned books may be procured, postage prepaid, from the Judy Publishing Co., 3323 Michigan Blvd., Chicago.

Periodicals

Bloodlines, Kalamazoo, Mich.; 65c year, $1.00 2 years, 10c copy.
The American Kennel Gazette, 221 Fourth Ave., New York, N. Y.; $4.00 year, 50c copy.
The American Field (Weekly), 440 S. Dearborn St., Chicago, Ill.; $5.00 year, 15c copy
The Boston Terrier, 644 Wrightwood Ave., Chicago, Ill.; $2.00 year, 20c copy.
Dogdom, Battle Creek, Mich.; $2.00 year, 20c copy.
Dog Craft, 217 S. Commercial St., Inglewood, Cal.; $2.00 year, 20c copy.
Kennel and Bench, 45 Melinda St., Toronto, Ont.; $2.00 year, 20c a copy.
Kennel Review, 117 West Colorado Blvd., Glendale, Calif.; $2.00 year, 20c copy.
The American Hound Journal, Tulsa, Okla.; $1.00 year.
Hounds and Hunting, 259 S. Park St., Decatur, Ill.; $1.50 year, 20c copy.
The Hunter's Horn, Sand Springs, Okla.
The Shepherd Dog Review, 30 Huntington Ave., Boston, Mass.; $3.00 year, 35c copy.
The Red Ranger, Rushville, Mo.; $1.00 year.
The Dog News, Third and Walnut Sts., Cincinnati, Ohio; $2.00 year, 20c copy.
The Dog Fancier, Battle Creek, Mich.; $2.00 year, 20c copy.
Dog World, 3323 Michigan Blvd., Chicago, Ill.; $2.00 year, 20c copy.
Dog and Pet News, 1928 S. Columbine St., Denver, Colo.; $1.00 year, 10c copy.
The Beagle Magazine, care of Hounds & Hunting, $1.50 year, 20c copy.
Western Kennel World, 21 Rosemont Place, San Francisco, Calif.; $2.00 year, 20c copy.
The Coursing News, Manhattan, Kans.; $5.00 a year with Stud Book, 75c copy.
Popular Dogs (Weekly), 119 S. 19 St., Philadelphia, Pa.; $4.00 year, 15c copy.
Field and Fancy (Weekly), Field and Fancy Pub. Co., 249 34th St., New York; $3.00 year.

Magazines should be ordered direct from the publishers. Many of them will supply sample copies on request.

Otto W. Luckloff.

Manhattan, Kans.

MILK FOR MEN

Important in the adult dietary as are whole milk, modifications of whole milk, and the separated constituents of whole milk and their modifications, the culinary combinations of milk and its constituents with other food stuffs are scarcely less important. These combinations are very numerous. It is only necessary to mention a few of them to suggest how extensive is the list: as bread and milk, milk toast; oatmeal, hominy, cream of wheat, rice and other cereals with milk; puddings made with milk and cereals or other starchy foods, with or without eggs or fruit; cheese sandwich, welsh rarebit, cheese fondu, macaroni and cheese; omelet made with milk and eggs, cheese omelet, custard; ice cream, and the culinary combinations into which butter enters. How important are milk and its constituents in the adult dietary can be appreciated by imagining that dietary without milk, or even without butter and cheese, or by reading a standard cook book.

In the dietary of healthy adults milk holds a prominent place. In the dietary of adult diseases it holds a preëminent place. And it is of great value in the adult dietary arranged to prevent disease. Civilization's constantly accelerating rate of progress is changing the environmental conditions of the human race so rapidly that the human organism experiences difficulty in making the necessary adaptations. One way to lessen this evolutionary strain is by making the diet more easy; and an effective move in that direction can be made by including in the diet more milk and its products and diminishing correspondingly the amount of animal flesh. Edward E. Cornwall, M. D., in *Medical Times*, 62:1.

Development of Veterinary Medicine in North America

By D. M. CAMPBELL

II—THE FIRST PERIOD—1790 to 1850

History is clarified experience.—Lowell.

2. THE FOUNDATION

(Continued from last month)

There are many observations on the necessity for proper grooming for horses and for the care of them when traveling. Incidentally, he gives us an insight as to the condition of the roads about Edinburgh, in the latter part of the eighteenth century, when he tells us that on coming in from a journey, one should remove the sand and mud from between the forelegs and from the saddle girths, since if this is not removed it will dry and on the next journey produce excoriations of the skin.

Again quoting General Smith:

In a long preface [to a later work] Clark tells us the reasons why it was written; it is a student's textbook composed of extracts from lectures he wrote in 1793-94 on the prospect of a veterinary school being established in Edinburgh, under the direction of the author. This school had the fullest assurance of the Government for its aid and support, consequently Clark declined an invitation to take the place of Sainbel [Charles Vial] in London on the death of the latter. Subsequently, owing to the political situation of the country, the school did not materialise, and we can well imagine Clark's bitter disappointment.

Even this long review of Clark's remarkable work seems inadequate. Its pages are a prolific mine of scientific information. Since the information it contains was available to them, it constitutes the standard by which early American writers on veterinary matters must be judged. It was 40 years before another veterinary work approaching it in quality was published in this country.

In the year following the publication of Clark's "Preventive Veterinary Medicine," the Congress provided for the first mounted organizatzion in the United States Army. As the veterinary service in the army was confined almost wholly to mounted organizations, for more than 100 years, this act (March 5, 1792), becomes important in our military veterinary history. The beginning was a modest one—one squadron of light dragoons consisting of four troops with a farrier for each troop to furnish veterinary service.

The next work we have to note is from the pen of a Philadelphia physician, Dr. James Mease, who took a great interest in disease of animals and over a period of more than thirty years added from time to time to the information available on this subject. His first such contribution was:

An Essay on the Disease Produced by the Bite of the Mad Dog or Other Rabid Animal, by James Mease, M. D., with a Preface and Appendix by J. C. Lettsom, M. D., F. R. S. Published in Philadelphia and London, 1793.

This work is dedicated to Benjamin Rush, M. D., Professor of the Institutes and of Clinical Medicine in the University of Pennsylvania. It is strictly a medical work intended for medical practitioners. There is but meager reference to rabies in animals, but such as is given, is interesting. The author states that the earliest record he can find referring to a mad dog is in Homer's Illiad, Book IX. He states that there are but three animals that develop the disease spontaneously, the dog, wolf and fox, but that the disease may be communicated to all other animals by bites.

A number of cases of alleged spontaneous development of rabies in man are discussed. The author concludes, however, that the evidence is not convincing. He states that good authorities believe that the disease may develop spontaneously in the cat and perhaps in all felidae, but he regards this as doubtful. The author cites the work of Doctor Rush (Medical Inquiries, Vol. III) who regards tetanus and rabies as being very closely al-

lied—both are due to wounds, both affect nerves, both are accompanied by spasms, difficult swallowing is characteristic of both diseases, and that they yield to the same remedies, viz.: "To excitement of an inflammation in the wounded part of the body or to long continued discharge of matter from it and to mercury."

A number of cases of rabies (in man) are cited by the author, together with the treatment given; in most instances "all to no avail." Here is a sample:

Doctor Wolf of Warsaw had two pounds of oil poured down his throat; he also had mercurial ointment applied externally and took calomel and bark [cinchona] internally —he was plunged occasionally in cold water —he died the third day. Another patient who was treated much on the same plan died on the fourth day.

After reviewing other cases, the author concludes:

"Thus we see that the bark, the mercury, the acids, the musk, the feeding on the most famous herbs, the cura anti-phlogistica are no specifics."

The symptoms of the disease in man are very fully given.

Eight years later (1801) Mease wrote another essay on "Bite of Dogs," the occasion being a change of opinion on the part of Doctor Rush, who was Mease's preceptor. Soon after publishing his "Medical Inquiries," Doctor Rush came to the conclusion that both rabies and tetanus are malignant fevers [inflammations], and the proper treatment for them is depletion—bleeding until the patient fainted—about 80 ounces—and purgatives.

Although Mease held Doctor Rush in the greatest respect, his opinions concerning rabies did not change with those of Doctor Rush and he published this second essay (only 62 pages), intended merely to controvert Doctor Rush's views. In this volume there is only one reference to the disease in animals—a record of an autopsy on a dog that had died of rabies. The findings were the usual ones; Doctor Mease concluding that the lesions of gastritis, pharyngitis, stomatitis, meningitis and conjunctivitis which were found, were due to the ordeal through which the animal had gone and not primarily to the disease.

He speaks of a number of autopsies on persons who had died of the disease and that in those, as in the autopsy on the dog, he found no evidence that the disease is a malignant fever [inflammation].

In the summer of 1793, a great epidemic of yellow fever occurred in Philadelphia. The mortality was very high and the terror inspired by the disease indescribable. All who could, fled from the city and those compelled to remain avoided one another as much as possible, since the belief became current that the plague was in some way contracted by greeting one's acquaintances. Throughout this terrible season, Dr. Benjamin Rush remained in the stricken city and ministered unceasingly to the sick and dying who were largely deserted even by their nearest relatives. Doctor Rush was already one of the most distinguished citizens of Philadelphia, the founder (1765) and head of the medical department of the University of Pennsylvania, a signer of the Declaration of Independence and Surgeon General of the Colonial forces during the Revolutionary War. His devoted services during the pestilence made him a popular hero. He was much interested in diseases of animals, both in their economic and public health aspects, and urged their attention upon physicians. The influence of this championing of veterinary medicine must be viewed in the light of Doctor Rush's popularity. A few years later as we shall see, he endeavored unsuccessfully to establish a veterinary department in the Medical College of which he was the head. Although he appears not to have referred to it in his lectures, unquestionably he must have been familiar with Clark's work. The record of his interest in veterinary medicine begins soon after its publication.

Texas fever was probably recognized in the Colonies at an early date, but no record of its presence has been found ear-

lier than an enactment of the legislature in North Carolina[1] in 1795, which among other things provided:

No persons shall hereafter drive any cattle from these parts of this state where the soil is sandy and the natural production or growth of timber is the long-leafed pine, into or through any of the highland parts of the state where the soil or growth of timber is of a different kind, between the first day of April and the first day of November in each year, under the penalty of $4.00 for each and every head of cattle so driven."

It seems probable that this law was intended to limit the spread of tick fever and further, it appears to be the first legislative enactment in connection with animal diseases in the United States.

CHARLES VIAL

In the following year (August, 1796), Texas fever occurred in Lancaster County, Pennsylvania, having been brought there by a herd of cattle driven from South Carolina. It was investigated by Dr. James Mease, who had served a preceptorship under Doctor Rush, and like him was much interested in animal diseases, particularly in rabies, on which subject he wrote the work already reviewed. Doctor Mease performed a number of autopsies on cattle that died in this outbreak in 1796 and recorded many careful observations. However, he did not publish his report until 20 years later. It will be noted in more detail under the date of publication.

[1]Arburua, Joseph M. Veterinary Medicine in the United States Prior to 1850. Seventieth Annual Meeting, American Veterinary Medical Association, Chicago, August 14-18, 1933.

CHARLES VIAL

Benoit Vial was born in the village of St. Bel near Lyons, France, January 28, 1750. By the death of his parents and of his grandfather, he was left an orphan and thrown among strangers at the age of three. He entered the Veterinary School at Lyons at the age of sixteen and acquitted himself so well that at the end of his second year he was made demonstrator and at the end of his third year an assistant surgeon. After a turbulent professional career of twenty years in France, he went to England and initiated the movement that resulted in the founding of the Veterinary College of London. He died of glanders August 21, 1793.

There has been much confusion as to Vial's name. In France he was known simply as Benoit Vial. When he went to England he changed the "Benoit" to "Charles" and added by way of identification "de St. Bel." This soon became de Saint Bel and then de Sainbel, and with the Charles dropped, we have Vial de Sainbel, and so it is nearly always found in British and American veterinary literature.

Vial occupied a number of positions of honor and responsibility in France but lost them all by quarreling with his superiors. Bourglet regarded him as "headstrong and inflexible." Undoubtedly he was supersensitive to criticism, capricious, of a suspicious nature and given to quarreling over trivial matters. In addition to his professional quarrels and intrigues, he became involved in the political turbulence of the period and his removal was recommended to "the Bastille from whence he will never return." It appears his emigration to England a few years later was a result of further political involvement and a desire to "keep his head on his shoulders."

Vial arrived in England in June, 1788, and in the following year proposed the establishment of a veterinary college in London to several agricultural societies. He was successful in obtaining the support of the Odiham Agricultural Society for the proposition and then with backing of John Hunter, the leading surgeon of London and a man of great personal influence, Earl Grovesnor, the leading breeder of racing stock in England in his day, and Granville Penn, a close personal friend and an influential admirer of Vial, the school was officially established April 8, 1791, and Vial began his course of lectures January, 1792.

Vial's scheme for the school was an admirable one. An elaborate course intended to occupy three years was projected and high standards set for the admission of pupils. His successor, Coleman, swept all this away; reduced the course to three months and sought the sons of grooms and farriers as students.

ARMY VETERINARY SERVICE

Orders assigning Lt. Colonel Horace S. Eakins to duty at Fort Clark, Texas, effective upon completion of his tour of foreign service are revoked.

Orders assigning Major Allen C. Wight to Carlisle Barracks are revoked, and Major Wight is relieved from assignment and duty at the Army Veterinary School, Army Medical Center, Washington, D. C., effective on or about July 5, 1934, will then proceed to Ft. Benjamin Harrison, Ind., and report for duty.

Major Clifford E. Pickering is relieved from further assignment and duty with the 1st Medical Regiment, Fort Bliss, Texas, effective in time to proceed to March Field, Calif., and report to the commanding officer, not later than May 31, 1934, for duty.

Major Charles M. Cowherd is relieved from further assignment and duty at Ft. Sam Houston, Texas, effective in time to enable him to proceed to Fort Hoyle, Md., and report not later than June 15, 1934, to the commanding officer for duty.

By direction of the President, the retirement of Colonel Wm. P. Hill from active service on May 31, 1934, under the requirements of the act of Congress approved June 30, 1882, and the provisions of the act of Congress approved April 23, 1930, is announced. Colonel Hill attained the age of sixty-four years on May 13, 1934.

Major Louis L. Shook is relieved from assignment and duty at the U. S. Military Academy, West Point, N. Y., effective in time to proceed to New York, N. Y., and sail on the transport scheduled to leave that port on or about July 17, 1934, for San Francisco, Calif., and upon arrival to proceed to Fort Bliss, Texas, and report for duty.

Major Harry E. Van Tuyl is relieved from duty at the Kansas State College of Agricultural and Applied Science, Manhattan, Kans., to take effect at such time as will enable him to proceed to Fort Hamilton, N. Y., and report not later than June 15, 1934, to the commanding general for duty. The name of Major Van Tuyl is removed from the detached officers' list effective upon relief from his present duty.

1st Lieut. John L. Owens is assigned to duty at Fort Riley, Kans., effective upon completion of his present tour of foreign service in Panama.

Orders directing Colonel James R. Shand and Lt. Colonel Daniel B. Leininger to sail on transport scheduled to leave San Francisco, Calif., on or about July 24, 1934, for New York, N. Y., and upon arrival in New York to proceed to Washington, D. C., and report to the commanding officer, Army Medical Center, for duty, are revoked.

Major Oscar C. Schwalm is relieved from further assignment and duty with the 1st Cavalry Division, Fort Bliss, Texas, effective in time to proceed to San Francisco, Calif., and sail on transport scheduled to leave that port for New York on or about July 24, 1934; upon arrival in New York will proceed to Washington, D. C., and report to the commanding officer Army Medical Center for duty for the purpose of pursuing a course of instruction at the Army Veterinary School.

Orders assigning 2d Lt. Wayne O. Kester to the General Dispensary U. S. Army, and additional duty as attending veterinarian at Army War College and Bolling Field, D. C., upon completion of his course of instruction at Medical Field Service School, Carlisle Bks., Pa., are revoked, and Lt. Kester will proceed to Ft. Bliss, Texas, for duty instead.

Major Chauncey E. Cook is relieved from further assignment and duty at Fort Leavenworth, Kans., effective in time for him to proceed to Washington, D. C., and report to the commanding officer, General Dispensary, U. S. Army, not later than June 20, 1934, for duty, and in addition will act as attending veterinarian at the Army War College.

Veterinary Reserve Corps

Promotions:

Selby, Orval Cogswell to: Lt. Col., 104 So. 4th St., Mankato, Minn.

Shoaff, Walter Powell, Capt., 217 Buena Vista, Paris, Ill.

New acceptances:

Conrad, Burton Wesley, Capt., 620 Main St., Sabetha, Kans.

Bunton, Samuel Emmitt, Jr., 2d Lt., Del Rio, Texas.

Jones, Wm. Laurie, 2d Lt., 612 Delaware St., Leavenworth, Kans.

Kissileff, Alfred, 2d Lt., Bethlehem Pike, Flourton, Pa.

Transferred to Aux-Res.

Spencer, Hume Francis, Capt., 2928 Paseo Del Refugio, Santa Barbara, Cal.

DEATH OF DR. U. G. HOUCK

Ulysses Grant Houck, 38 years an employee of the Bureau of Animal Industry, U. S. Department of Agriculture, and since 1928 its associate chief, died of Hodgkins disease at his home in Washington April 24, 1934, after a brief illness.

Doctor Houck was born on a farm in Luzerne County, Pennsylvania, January 2, 1886. In 1895, he was graduated from the School of Veterinary Medicine, University of Pennsylvania. For a period he was resident surgeon at the Veterinary Hospital of the University. He also performed special work for the State. On September 15, 1896, he entered the Bureau of Animal Industry at Chicago. In 1898, he was transferred to Sioux City, Iowa, and later to Boston. In 1899 he was detailed as traveling inspector. For the last 16 years, he directed activities of the Bureau's Division of Hog Cholera Control.

Doctor Houck was a pioneer in the organization of the enlarged meat-inspection service under the 1906 law. During the 1924 outbreak of foot-and-mouth disease in California, he was in charge of the Federal and State forces which eradicated the malady. Shortly after the Bureau completed its fortieth year of existence in 1924, he compiled an historical sketch of its accomplishments. The book is generally appraised as the best composite record of the Bureau of Animal Industry's service to the livestock industry and the public.

Why KEN-L-RATION *is now available in* BEEF *or* HORSE MEAT

No one knows better than the licensed, graduate veterinarian the confusion that has existed in the minds of many dog owners because of the "No Horse Meat" slogan—a slogan used merely to cloud the issue.

The real issue is KNOWN HIGH QUALITY as against unknown or inferior quality. It's a clear question of Ken-L-Ration against utterly inferior, cheaper canned dog foods.

Chappel Bros. have taken a simple way to put the *emphasis where it belongs.* Ken-L-Ration is now furnished two ways: with a basis of horse meat, as always—or with beef.

Now your clients don't have to accept a substitute for Ken-L-Ration quality, if they wish to feed a beef food. Now they can feed a prepared beef food of the superior Ken-L-Ration standard of quality, nourishment, wholesomeness, purity and completeness and balance of ration.

Chappel Bros. will always continue to supply and recommend horse meat as being superior to beef in canine nutrition, but the important question is not horse meat vs. beef but, *proved quality against inferiority.* Chappel Bros. have made it possible for the dog owner to choose safely between a beef meat or a horse meat product.

It is now merely a matter of your client's choice. You can sell Ken-L-Ration two ways, knowing that either is worthy of your professional recommendation.

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FROM THE WORLD'S FIRST DIET KITCHEN FOR DOGS